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Contents

1. Bernard,A. & Koch. Flax. 1851
2. Claussen,P. The flax movement.
3. Hodges. On the composition & economy of the flax plant.1852
4. Der Hanfbau u.eine Bereitung im Bezirke Emmendingen 1850
5-9. Royal So.for the Promotion & Improvement of the growth of flax in Ireland. Annual report & transactions. 10-14,1850/4

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FLAX:

ITS MANUFACTURE,

ON SCHENCK'S PATENT SYSTEM;

WITH DIRECTIONS

RESPECTING THE ERECTION AND MANAGEMENT

OF

RETTERIES, OR STEEPING ESTABLISHMENTS;

FOLLOWED BY

PRACTICAL INSTRUCTIONS ON THE CULTIVATION OF FLAX.

BY A. BERNARD & KOCH.

DUBLIN: JAMES M'GLASHAN, 50, UPPER SACKVILLE-STREET.
LONDON: JAMES RIDGWAY, PICCADILLY.

1851.

PRICE SIXPENCE.

1

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WITH DIRECTIONS

RESPECTING THE ERECTION AND MANAGEMENT

ERRATA:

Page 11, line 35, for "eight sheds" read "four sheds."
Page 17, line 30, for "when dried" read "when pulled."
Page 19, line 8, for "Irish acre" read "Irish crop."

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FLAX:

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OWING to several causes, a great deal of attention has lately been directed to the cultivation of flax. A general opinion, grown almost to a conviction, prevails amongst the most intelligent portion of the agricultural world, that flax can be profitably introduced into the general farming system, of which it may even become an important element. This desired extension, however, has been hitherto prevented by various causes, which can all be traced to the system under which that crop has to be managed, and by which it is made essentially to differ from all other kinds of farming produce.

By the present method, flax has to be steeped and grassed by the grower himself. This requires a certain knowledge and experience which comparatively very few possess. Even those having long experience are not always sure of success; the operations being carried on in the open air, the steeping and grassing are influenced by atmospheric causes, over which they have no control. Thus, it frequently happens that well-grown, promising crops, have lost part of their value, after the work and risk, which properly belong to the farmer, were over; his profit, instead of being proportionate to the merit of the growing crop, has depended on the after management. There are no great difficulties in growing flax—any careful farmer will succeed; but when he has to become, once a-year, against his own will, a manufacturer, it is a matter of doubt whether his skill can be equal to the task, and whether, on taking a large range, most farmers derive a return proportionate to their labour and trouble.

In Belgium, where the best flax is produced, the grower is seldom the manufacturer. The crop is disposed of to a class of persons called factors, who prepare it for the spinner. The division of labour here, as in every other department of industry, is productive of the most beneficial results; the farmer obtains a remunerative price for his crop, without any further trouble, and the factor, from the circumstance of being constantly employed in the manufacture of the article, may reasonably be expected to understand it better, and to produce a superior article to what the farmer would do.

The introduction, into this country, of a similar system, would produce the same results. The erection of retteries (steeping establishments), by opening in their vicinity a market for the flax in its raw state, will operate in precisely the same manner. Experience has already shewn that, wherever a rettery has been erected, the cultivation of flax has at once been considerably increased; partly by farmers, who were not in the habit of growing it, partly by men who sowed more than what they intended for their own steeping, with the view of selling the surplus in the raw state.

Retteries, on Schenck's system, combine, with the above advantages, others belonging to the process itself. They have now been so fully tested, during the last three years, that it is only necessary to refer to the annexed statements, and to the last annual report of the Royal Society for the Promotion and Improvement of the Growth of Flax, to be convinced of their superiority. The Royal Flax Society, whose competency and circumspection in such matters no one can doubt, named a sub-committee of practical men to investigate all points connected with the new system; and, after repeated and severe examinations, their final report concludes by recommending, in the strongest manner, its general adoption.

Parties desirous to enter into this new branch of business, in districts where flax has not been usually grown, should ascertain—

Whether the general character of the land is suitable for the growth of flax?

Whether a sufficient quantity is likely to be grown in the immediate neighbourhood—say ten miles round?

The quality of the water, and if a constant supply for the retting process can be had, during the whole year?

Soft water is the best; hard water must be entirely avoided.

They should also engage a person who thoroughly understands flax growing, to select the land in the first instance, and to give the general directions as to the management of the crop, up to the harvesting. By doing this, they will introduce, at the onset, the best method, and avoid the risk of trials made without practical knowledge. This remark applies chiefly to England, in many parts of which the flax crop is not generally understood, and where prejudices still exist against it.

The following pages are explanatory of Schenck's Patent System, and will afford ample and practical information on the subject:—

SITE OF A RETTERY.

In the selection of a site for a rettery, the following requisites, which are all of importance, must be kept in view. They are —An open space of four to eight Statute acres, according to the proposed size of the establishment, accessible by good roads, and unsheltered by either hills or plantations, to ensure quick drying.

A constant supply of pure, soft water, for retting, having, if possible, a fall of six feet, by which pumping is avoided.

A good outlet for the waste water.

The vicinity of a village, or of cottages, from which a sufficient number of hands can be obtained.

If the machinery is to be driven by water power, it is absolutely necessary that the supply of water be never-failing. Great inconvenience and serious loss would be caused by a partial stoppage of the work, during the best season; it would then be found necessary to erect a steam-engine, which would cause an additional outlay.

BUILDINGS OF A RETTERY.

The manner of laying out the buildings of a rettery must vary according to local circumstances, but there are some general principles which must, in all cases, be kept in view. Economy of labour is aimed at in all manufacturing establishments, and in a rettery this point is of paramount importance. Flax is very bulky, and has to undergo so many manipulations, in its dry and wet state, that the arrangements must be such as to save all unnecessary handling, carrying, and labour of any kind. For this purpose, the different operations must be carried on in distinct places, contiguous to each other, and, in order to avoid any confusion, they should follow each other in an onward direction.

Ample space must be given in each department, want of room being of great disadvantage.

The annexed plan of a model rettery conveys an idea of such arrangements, combining the principal requisites for commodity and cheapness of labour. It will be seen that the flax moves on regularly in the same direction, from the seeding room to the retting room, thence to the spreading room, the drying sheds, &c. The plan shews the buildings to consist of

The seeding room, with loft above.
The vat house and spreading room.
The drying sheds.
The desiccating house.
The store sheds.
The scutching mill, and engine or water-wheel house.

The seeding room must be of large size, so as to allow ample room for the manipulation, and to contain a stock of flax. For the greater facility of bringing the flax in, it should be on the ground floor, be lofty enough, and have doors sufficiently large to admit loaded carts or trucks. It should be so situated that a shaft can be brought in, and driven from the main power, and so that it be in communication with the vat house. The loft is used for cleaning and storing the seed, and for various other purposes: it should have a good, strong floor.

The vat house and spreading room consist of a ground floor only. They can be built together with a valley roof, resting on pillars. The portion of roof over the vats should have louvers, to give ventilation, and to allow the free escape of the vapours which arise from the vats. Asphalte makes a good floor for the spreading room. All the doors should be at least six feet wide. Hooped, wooden vats, oval shape, have been found to answer best; they resist the pressure caused during the fermentation, and are not liable to frequent leakage; they are also handy to work, and can be easily repaired. Wooden, square vats, however strongly made, do not keep stanch for a long time.

The drying sheds are to be erected on an open space, well exposed to the winds, and not far distant from the spreading room. They must be placed at right angle with the prevailing wind, and at fifty or sixty feet distance from each other.

The desiccating house is divided into two separate rooms, each to contain the flax of one day's work. A fire-proof construction is to be preferred.

The store sheds are necessary for housing the dried flax previous to its being scutched. They should be erected near the scutching mill, and made so as to allow carts to go under.

The scutching mill must be immediately adjoining to the power, whether steam or water; it must be dry, and well lighted, and built of sufficient dimensions to contain, besides the machinery, a stock of flax straw, and to give plenty of room to the workers.

The stack yard should be situated as near as possible to the main works, and facing the seeding house.

WORK PERFORMED IN A RETTERY.

Seeding.—This is done by a machine made expressly for the purpose, and acting by means of rollers, between which the seed end of the flax is passed sideways, two or three times, the capsules or bolls are crushed, and the seed falls out uninjured, the flax straw being neither crushed nor put out of shape. After the beets have passed through the machine, they are lashed, to shake out the loose seed and the broken bolls. As the flax requires to be in a dry state for that operation, a stock equal to several days' work should always be kept in the seeding house. This stock to be renewed whenever the state of the weather permits.

The seed and bolls are then passed through a dressing machine fitted with the proper sieves. Seed intended for sowing should receive a double cleaning, to remove all light pickle. The clean seed should be kept on a well ventilated loft, and be allowed to remain some time exposed to the air, receiving occasional turnings before it is put into bags—barrels are better.

The bolls or chaff are excellent food for cattle, when steamed and mixed with turnips.

Several other methods of seeding have been resorted to, but they are all open to objections. Thrashing machines cause a great waste, and damage the ends of the flax, and part of the seed is left in the centre of the beet. Rippling requires a large space, and numerous hands,—is too slow and expensive; besides, in this case, as with the thrashing machine, the bolls have to be crushed afterwards. Beating the seed off by hand is less objectionable, but it is only applicable on a smaller scale.

SORTING.—This work must be done very carefully, and requires experienced hands. The sorters have to separate the different qualities, according to colour and length, forming new beets containing but one quality. They pass these new beets to the binders, who tie them singly, as handed to them, keeping the roots square;—rush bands are preferable. It is a good plan to cut off the roots by a machine like a chaff-cutter, as it facilitates the after handling; the beets are now selected and piled up according to quality. The object of sorting is, to have every vat filled with the same description of flax, which ensures a more uniform retting and more even quality. The flax is now ready to go into the vats.

RETTING.—In order to have in every vat as nearly as possible the same relative proportions of flax and water, it is well to weigh the flax before putting it into the vat; the beets must be placed carefully upright, the roots resting on the false bottom, and pressed slightly together by the workman as he goes on filling, care being taken that all be straight to facilitate a free upwards circulation of the heated water and of the gases. When the vat is filled with flax, the covers are put on and secured by cross-bars, so as to keep the flax 4 or 5 inches immersed in the water. The vats are then filled up with cold water, and enough steam is turned on to raise the heat to 90 deg. in about eight hours; the temperature of the water is not to exceed at any time 90 deg., but must be kept uniformly at that degree, day and night, during the whole retting process; this is easily effected by letting in steam whenever the temperature begins to fall. The flax must not be left any length of time in the cold water, as it would retard the fermentation; therefore, the vats must not be filled with cold water long before the time the steam is to be put on.

The number of hours for the retting are to be reckoned from the time the steam is turned on at first. The duration of the process averages about sixty-six hours, but will vary according to circumstances such as the following:—

The quality of the water.—That which is soft and more suitable for fermenting purposes will produce a more active and quicker retting.

The description of flax.—Good, sound, well matured and well saved flax requires more retting than unripe, green-pulled, or otherwise damaged flax.

Quality aimed at.—If the object is to bring the fibre to great fineness, the retting must be carried on longer than for obtaining a stronger but coarser article.

In some cases a temperature of 80 and 85 deg. may be advantageously used, but the retting will then require a longer time than with the water at 90 deg.

One of the best tests for ascertaining when flax is properly retted, is to take a few stalks of average fineness, which are broken in two places about three inches apart; if the wood so broken, separates easily on being drawn downwards, without tearing the fibre or retaining any part of it, the flax is sufficiently retted, and the water may be run off.

It may answer in some cases to give two successive rettings to the same flax; strong hearty flax will be improved by this double operation, but, of course, it increases the expense. After the first retting, flax must be thoroughly dried, before it is put again in the water for the second operation.

DRYING.—It is important that flax should be dried as quickly as possible, to prevent any further decomposition. For this purpose, it is spread between the holders, which are suspended under the drying sheds. These holders consist of a double wooden rod, fastened together by a wire staple and peg in the centre, and by metal rings at each end. The under rod is placed on a table, flax is spread evenly over it, and the upper rod is put on and fastened, as mentioned above. It takes fifty holders for each cwt. of flax, weighed when dry.

The flax has to remain three days under the drying sheds;—in favourable weather it will be quite fit for being tied and stacked; but if the atmosphere is damp, the drying must be completed by means of artificial heat, which should not exceed 90 to 100 degrees. This last process must be watched very carefully; for, if the flax be overdried, its quality may be considerably impaired. Flax must in no case be scutched immediately after drying; it should first be put into stacks, or under open sheds, where it has to rest. Six weeks is considered to be a sufficient time to bring it to its scutching point.

Scutching.—Flax can be scutched either by hand or by machinery. Hand-scutching, although productive of good results, when performed by a skilful workman, is not practicable on a large scale, owing to the difficulty of procuring the number of trained hands necessary for the work. Machinery must, necessarily, be resorted to. With that at present in use, the operation of scutching requires, on the part of the workman, practice and experience,—in fact, it is a profession of itself; a description would be quite inadequate to convey a correct idea of it, and would, in no case, enable a person to do the work who had not learned it practically. Machines have been brought out lately, calculated to dispense with skilled labour, and there is every probability that they will be brought to work satisfactorily.

The shoves, or woody part, produced at the scutching mill, are used as fuel, three tons of which are equal to one ton of coals in raising steam.

Classing.—On leaving the scutch mill, flax has, finally, to be classed according to its quality and value, and to be made up into bundles, after which it is ready for market. Each rettery should adopt a regular classification for the different qualities, each being always represented by the same mark and denomination. This will facilitate the sale.

In order to give an approximate idea of the outlay involved in the erection of a rettery, and of the cost of labour, the following estimates, for establishments of two different sizes, have been carefully calculated, and a statement of the number of hands required by each, is also subjoined:—

RETTERY CALCULATED TO CONSUME THE PRODUCE OF TWO HUNDRED ACRES.

PLANT.

	£	s.	d.	£	s.	d.
6 vats, of 3,000 gallons, with steam-pipes, cocks, &c.,	£140	0	0			
Main steam-pipe and main cock,	10	0	0			
Water-pipe and 4 cocks or valves,	12	0	0			
5,000 drying rods and rings,	55	0	0			
Seeding machine,	15	0	0			
Root-cutting machine,	4	0	0			
Dressing machine and sieves,	8	0	0			
Desiccating apparatus,	60	0	0			
Weighing bridge,	20	0	0			
Sundry implements—tables, barrows, &c.,	36	0	0			
				£360	0	0
Twelve-horse boiler and eight-horse high pressure steam-engine,	£160	0	0			
Shafting,	15	0	0			
Scutching machinery,	140	0	0			
				315	0	0

BUILDINGS.

	£	s.	d.	£	s.	d.
Seeding house—2 stories, 80 by 25 feet, walls 20 feet high, slated roof, ground floor asphalted; upper floor, 3 inch plank,	£300	0	0			
Vat house and spreading room—80 by 36 feet, walls 10 feet high, felt roof, asphalted floor in spreading room,	130	0	0			
Scutching mill—45 by 25 feet, walls 11 feet high, slated roof, asphalted floor,	110	0	0			
Engine house and chimney,	70	0	0			
Desiccating house—20 by 20 feet, brick walls, plastered inside and ceiled, slated roof, or iron beams and brick arches, to be fire-proof,	60	0	0			
Drying sheds—eight sheds, 84 by 12 feet, all wood,	100	0	0			
Store sheds—two sheds, 60 by 16 feet, all wood,	50	0	0			
				820	0	0
				£1,495	0	0

In case of water power being employed, instead of a steam-engine, a portable upright boiler will be sufficient, the cost of which is £50. This, not requiring a masonry chimney, will effect a saving of about £100.

HANDS EMPLOYED.

	Men.	Boys.	Girls.
General work,	1 manager,	0	0
"	1 day fireman,	0	0
"	1 night fireman,	0	0
"	1 watchman,	0	0
"	1 man,	2	0
Seeding*,	1 do.,	0	7
Retting and drying,	1 man,	4	10
Scutching,	1 foreman,	0	0
"	8 scutchers,	0	8
"	1 maker-up,	0	0
Total,	17	6	25—48

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* For six months of the year only.

RETTERY CALCULATED TO CONSUME THE PRODUCE OF FOUR HUNDRED ACRES.

PLANT.

12 vats, of 3,000 gallons, with steam-pipes, cocks, &c., ...	£280	0	0			
Main steam-pipe and main cock, ...	10	0	0			
Water-pipe and 8 cocks, ...	24	0	0			
10,000 drying rods and rings, ...	110	0	0			
2 seeding machines, ...	30	0	0			
Root-cutting machine, ...	4	0	0			
Dressing machine and sieves, ...	8	0	0			
Desiccating apparatus, ...	90	0	0			
Weighing bridge, ...	20	0	0			
Sundry implements—tables, barrows, &c., ...	54	0	0			
				£630	0	0
16-horse boiler and 12-horse high-pressure steam-engine, ...	£240	0	0			
Shafting, ...	20	0	0			
Scutching machinery, ...	240	0	0			
				500	0	0

BUILDINGS.

Seeding house—84 by 36 feet, 2 stories, walls 20 feet high, slated roof, ground floor asphalted; upper floor, 3-inch plank, ...	£400	0	0			
Vat house and spreading room, 84 by 56 feet, walls 10 feet high, felt roof, with valley, and iron columns; asphalted floor in spreading room, ...	200	0	0			
Scutching mill—50 by 36 feet, walls 11 feet high, slated roof, asphalte floor, ...	160	0	0			
Engine house and chimney, ...	100	0	0			
Desiccating house—40 by 20 feet, brick walls, plastered inside and ceiled, slated roof, or with iron beams and arches, to make it fire-proof,	100	0	0			
Drying sheds—8 sheds, 85 by 12 feet, all wood,	200	0	0			
Store sheds—4 sheds, 60 by 16 feet, all wood,...	100	0	0			
				1,260	0	0
				£2,390	0	0

HANDS EMPLOYED.

	Men.	Boys.	Girls.
General work, ...	1 manager, ...	0	0
"	1 day fireman, ...	0	0
"	1 night fireman, ...	0	0
"	1 watchman, ...	0	0
"	2 men, ...	4	0
Seeding*, ...	1 foreman, ...	0	0
"	2 men, ...	0	14
Retting and drying, ...	2 men, ...	5	20
Scutching, ...	1 foreman, ...	0	0
"	16 scutchers, ...	0	12
"	2 makers-up, ...	0	0
Total, ...	30	9	46—85

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* For six months of the year only.

CULTIVATION OF FLAX.

The following instructions on the management of a flax crop are based on practical and extensive experience. Much useful matter has also been derived from the publications of the Royal Flax Society of Belfast, from the excellent works of their Secretary, Mr. James MacAdam, jun., and of Mr. Sproule, and from others published on the Continent:—

Climate.—There is no doubt that the climate of the United Kingdom is admirably adapted for flax culture. The superior qualities occasionally produced are a proof of this. In some respects, it has even an advantage over that of other flax-growing countries, since the severe droughts which frequently occur there in Spring often destroy the crops; it being calculated that once in every four years they fail from this cause. If a long continuance of drought, with a hot sun, should occur, after the braird has reached a height of two or three inches, the heat parches up the earth, as the leaves are unable yet to exclude the scorching rays from the surface of the soil, and the vegetation is completely stopped. With this drawback the farmer in this country has rarely to contend. When ordinary attention is paid to the preparation of the land, and when the seed is sown at the proper season, a good braird may almost with certainty be calculated upon.

Soil and Rotation.—With careful cultivation, good flax may be grown on a great variety of soils, but some are much better adapted to it than others. The best is a sound, dry, deep loam, with a clay subsoil. It is necessary that the land be drained and subsoiled, as, when it is saturated with either underground or surface water, good crops cannot be expected. Light clays and alluvial soils will also do well, under proper management; a mixture of sand and clay is also very suitable, especially on a clay subsoil. In all cases, the land must be deep, as the roots of flax penetrate two feet under the surface. Light sandy, or gravelly soils, and very strong undrained clays are to be avoided: the last, on account of its liability to bake during very dry weather; neither can a heavy crop be expected from very recently reclaimed bog.

Experience has shewn that it is not advisable to grow flax more than once in every eight or ten years, on the same ground.

In Belgium, it almost universally follows a corn crop, and the same system should be adopted in this country; but it must be understood that it is only after corn following a green or manured crop, or old lea. It is a general error among farmers in Ireland to consider it necessary that flax should follow potatoes; except on very poor soils, a better crop will be produced after grain, and the double benefit of the flax and grain secured. If old lea be broken up, and potatoes planted, followed by oats, a very fine crop of flax may be obtained in the ensuing year.

PREPARATION OF THE SOIL.—Of all points connected with the cultivation of flax, the most prominent is the preparation of the land, being even of more moment than its nature and quality. The objects to be attained are, the reduction of the soil to a fine tilth, and the thorough eradication of weeds. Land intended for flax should receive a deep ploughing in Autumn, so soon as the previous crop is removed. This early ploughing facilitates the after pulverisation of the soil. In this state it remains during the Winter. In Spring it should be well harrowed, to reduce partially the furrow slices which have stood the Winter. The weeds brought to the surface are to be carefully collected, and removed from the field. After this, another ploughing is to be given, in a direction crossing the preceding one; the harrowing is then to be repeated, and continued as long as it will be found to have a beneficial effect in pulverising the soil. A roller should then follow, to consolidate the ground, and to break up the lumps, which, in dry weather, and especially in adhesive soils, will resist the action of the harrow alone. Deepness of tillage has been already alluded to; it is of much more importance than is usually imagined, as, unless the under ground is loosened, the roots will be checked, and the plants unhealthy.

The land must be laid out in broad flats; when sown in ridges, the crop grows unevenly, the plants on the tops and in the hollows being of different lengths.

SOWING.—The seed is to be sown broadcast, but great care is necessary to have it evenly distributed over the surface. In England it has been successfully sown with a close drill. It is covered with a light harrowing, after which the roller is to pass over the ground, to ensure quick and even germination. The seed should be but very slightly covered. The proper quantity to be sown is 2½ imperial bushels to the Statute acre, or 4 bushels to the Irish acre, when of the best quality. If the seed be at all inferior, a little more must be sown. This quantity is best calculated to obviate two evils. Thin sowing causes the plant to throw out branches, which yield an abundance of seed, but the fibre is generally coarse, and those small branches are cut and knocked away in the scutching. Thick sowing, on the reverse, produces finer fibre; but, in this country, owing to storms and heavy rains, the crop would be too liable to lodge.

In the choice of seed, great care is necessary, and on no account should an inferior quality be sown. In Ireland, Riga seed is almost universally the favourite; Dutch is considered, by some, better for heavy soils. But home-saved seed, renewed every two years, will be found preferable to either; it will grow healthier, and, in most cases, will give a better yield. Large quantities of home-saved have been sown last year, and it has given such satisfaction that many farmers now give it the preference. Foreign seed, particularly the Riga, always contains a great quantity of the seeds of weeds. On this account, it should never be sown without having been sifted with a perforated zinc sieve;—it is very easily done, and will save much trouble in the weeding.

Flax should be sown as early as possible; the sooner sown, the sooner it will be ready for pulling—a very important consideration with regard to the proper saving of the crop. Early sown flax will also produce a better quality. If the weather be good, the sowing should take place early in April, and even sooner, if the season is mild and favourable. This, of course, must depend on circumstances and localities. The plant is not killed by moderate frosts, though, if subjected to much of such weather, it becomes checked in its growth.

Cloverseed is frequently sown with flax; but it is never done without injury to the flax itself, particularly if the season be wet. The growing clover, by retaining too much moisture, and by preventing the circulation of air about the roots of the flax, tends to discolour the lower part of the stalks, and to lessen the quantity of fibre; and, when the flax is pulled, it retards the winning, and, consequently, the housing of the crop. It is better that the sowing of the clover or grasses should be deferred until after the flax is pulled, as sufficient time remains for that purpose.

Weeding.—When the plants are three or four inches high, which will be in about a month, they should be carefully weeded. The chief reason for this operation is, of course, to prevent useless vegetation abstracting a portion of the nourishment; but weeds are also hurtful, because, when allowed to grow, they are pulled along with the flax, interfere with the retting and scutching, and thus reduce the value of the crop. Weeds are also very detrimental to the crop, in a wet and stormy season; they prevent the flax from rising up again, when it has been beaten down by wind or rain, and cause it to be permanently lodged.

So much stress is laid on weeding, both in Belgium and in Holland, that it is repeated twice, and even three times. Women and children are employed for that purpose. They creep along on all-fours, having coarse cloths round their knees, as it injures the young plants less than by walking on them. They also work facing the wind, so that the plants laid flat by their pressure may be blown up again, or at least be assisted to regain their upright position. A breezy day is, therefore, the most appropriate; but weeding should never be done in very dry weather. If the seed has been well sifted before sowing, the weeding will be much easier.

Pulling.—Flax intended to be stacked must not be pulled wet; pulling must, therefore, be done in dry weather only, and should not be commenced before the dew is off. If rain sets in, it must be discontinued. After rain, the slightest breeze will shake the wet off the standing flax; but, if put wet into beets, it will take many days to dry it. This will be particularly the case when flax has been pulled rather unripe, or when not free from weeds.

The practice in Ireland has generally been, to pull before the seed in the boll has commenced to change its green colour, and when the lower part only of the stalk has turned yellow. This rule may be good, when flax is to be immediately steeped in the open pools, and the seed lost; but when the object is to save the seed, and to stack the flax, the pulling must be deferred for a few days, until, and not before, two-thirds, at least, of the stalk has turned yellow, and lost its leaves, and the seed has hardened, and changed to a light brown colour. Flax pulled at this period will dry and win in a much shorter time, it will preserve a bright yellow colour, and be less injured by rain whilst in the stook; the seed will be plumper and more oily. When pulled too green, flax will be of a dark colour, and spotted, the yield will be less, and, in case of rain during the winning time, it will be liable to heat. An exception is to be made in the case of lodged flax, which would rot, especially if the ground is wet; it should be pulled sooner, and kept by itself.

In pulling, the short stalks should be kept separate from the long ones. To effect this, the puller grasps the handful just under the bolls, so that the shorter plants are left standing. These are next pulled by themselves, in a second handful. It is most important to take time and care to keep the flax even, like a brush, at the root ends. This being attended to will save waste, and give additional value to the flax straw. The handfuls are laid flat on the ground, and are tied in the same way into small beets, each of these beets containing only flax of the same length, the roots even and square. Stooks are then formed, of twelve beets each—six on each side, the roots kept fifteen or eighteen inches apart on the ground, to allow a free circulation of air; the heads resting against each other, and drawn into a sharp ridge, to run off the rain water. Such stooks, when well made, will resist a strong wind; but, if any are thrown down, they must be put up again immediately, and not allowed to lie on the ground.

Another and better way of winning flax is the Courtrai system. In the district from which it derives its name, the flax, when dried, is set up, without being tied, in long narrow stooks, the top of one handful crossing that of the next, and the roots kept apart; the ridge of the stook is also drawn to a fine edge, so as to throw off the wet; the two extremities of the stook are secured by a few stalks, brought round from each side, and tied together. The flax, being loose, and in thin layers, dries quickly, and preserves an even colour. When dry, it is tied up in large beets, ready for the stack. A stook of this kind, to be well made, requires a practised hand; and a mere description would not be sufficient to enable a person to make one properly.

After having remained from fifteen to twenty days in the stook, the flax is ready for stacking. It would be liable to heat, if stacked before it is properly winned, and if put in at all damp.

PRODUCE OF FLAX.

Various statements, some of which widely differ from each other, have been put forward, in relation to the average quantities of flax fibre and of seed produced per acre. There is no doubt that as great, or perhaps greater, difference of produce exists, with regard to flax, as with any other crops. In Belgium, the average weight of fibre, per acre, is much greater than in Ireland, and their best crops, also, exceed the best crops of Ulster. In the districts of England where flax has been regularly cultivated, it appears that the returns, especially of seed, are larger than in Ireland; and, lastly, in Ireland itself, the Northern districts shew a better average than the Southern or Western provinces, where flax has been only recently introduced, and where land is, generally, not so well cultivated.

The Royal Flax Society have published, in their report for 1849, a statement of the quantity of fibre, per acre, produced in fourteen different districts of the North of Ireland, according to returns made by the local farming societies. This document shews the average to be a little under 5 cwts. per Statute acre; the lowest being 3½ cwts., and the highest 7 cwts. In the Provinces of Connaught and Munster, the return does not exceed 4 cwts., making a total average for Ireland of about 4½ cwts. to the Statute acre. In England, particularly in Yorkshire and in Norfolk, 5½ cwts. may be taken as the mean produce; and, in Belgium, it reaches nearly 6 cwts.

The yield of seed ranges from 6 to 12 bushels per Statute acre. In some districts of England, flax is cultivated principally with a view to a large crop of seed, and, for that purpose, is sown thin, on well manured ground. In these cases, the produce reaches 20 bushels per Statute acre (32 bushels per Irish acre), and even exceeds that; but the weight of fibre is generally small. Neither seed nor fibre, however, should be sacrificed;—a good return of both together ought to be the aim of every farmer, as it can be had on land of average quality, by attending to the preceding rules.

The produce in raw flax, or flax straw, has been ascertained, in several parts of Ireland, to be from 40 to 45 cwts. per Statute acre (65 to 73 cwt. per Irish acre) of flax straw, weighed when quite dry, and before seeding. In Yorkshire, it appears, from published statements, that 50 to 55 cwts. per Statute acre (81 to 89 cwts. per Irish acre), are commonly grown.

After seeding, the weight of the flax straw is reduced by that of the seed and bolls taken off, and by the waste made in the operation. As a general rule, this loss may be taken at 25 per cent. of the former weight. Therefore, an English crop will yield, per Statute acre, 40 cwts., and an Irish acre about 32 cwts., of pure flax, ready for retting.

A further loss of weight occurs by the retting operation. When flax has been retted and dried again, it is found to have lost 20 to 25 per cent. of the weight before retting.

The yield of scutched fibre, per cwt. of straw, depends, not only on the quality of the flax itself, but also on the description of machinery employed, and on the skill of the workman. No rule can, therefore, be laid down; but good average flax, retted by Schenck's process, and scutched by competent hands, produces from 20 to 22lbs. of fibre to the cwt. of retted straw, which is equal to 16 or 17lbs. per cwt. of unretted straw.

By comparing this yield with what is stated above of the weight of seeded straw per acre—say 32 cwts. in Ireland, and 40 cwts. in England—the results are 4¾ and 5¾ cwts. respectively, for the produce of fibre per Statute acre.

It has been endeavoured, in the preceding pages, to give all the information respecting flax management which can be embodied in a concise form. It can be, however, only of a general character; and the flax business, no more than any other, cannot be taught by books—it must be learned by practice. In every newly established concern, there should be a person who, having previously worked in a rettery, knows practically the details of management, in all the different departments.

The patentees are anxious to afford to parties entering into this business the information and advice which their experience enables them to give. Whenever the erection of a rettery has been decided upon, they will, if it is required, visit the intended locality, so as to assist in laying out the establishment; and they will contribute, as much as lies in their power, to place each new concern on such a footing as will ensure success.

Communications to be addressed to

A. BERNARD & KOCH, BELFAST.

Leeds, 27th July, 1850.

Messrs. A. Bernard & Koch,—I now enclose a statement of the result of the experiment with Dutch flax straw, which I think is decidedly favourable to the plan of hot water steeping.

ARTHUR MARSHALL.

EXPERIMENT MADE WITH DUTCH FLAX STRAW CROP OF 1849.

The same lot was divided into three parts:—One was steeped in Holland, in the open pools, and hand-scutched; another was retted at Cregagh, by the patent process, and mill-scutched; the third at Patrington, also by the patent process, but was retted twice, likewise mill-scutched.

RETTED.	WEIGHT.		Loss of Weight per Cent.	WEIGHT.		Yield per Cent.	Yield from Hackle, per Cwt.	Value of Flax, per Cwt.	Compara-tive Value per Acre.	STRENGTH.			
	Before Retting.	After Retting.		Before Scutching.	After Scutching.					Grey Thread.	Coloured Thread.	W.-Brown Thread.	Bleached Thread.
	Cwts. lbs.	Cwts. lbs.		Cwts. lbs.	Cwts. lbs.		lbs. ozs.	s. D.	Shillings.				
In Holland,...	49 7	40 3	18·9	40 3	7 4	18·4	61 1	55 10	188	7·7	7·8	7·6	6·9
At Patrington,	12 3	9 8	20·5	9 5	1 5	15·7	64 0	74 10	210	7·7	7·9	7·4	7·0
At Cregagh,...	12 5	10 2	18·9	10 2	1 84	18·1	62 4	63 10	214	7·8	7·2	7·5	6·7

The acreage of the field on which the flax was grown is not exactly known, but the value per acre may be taken as correct, in regard to the proportionate value of each experimental lot.

The low yield from the scutching at Patrington is owing, most likely, to defective scutching.

The strength of the thread much as usual.

Value of Flax per Cwt.—Of that rated in Holland, the invoice price at which it was bought; the other two, values fixed in proportion to the comparative values of the dressed flax.

EXTRACT FROM THE ANNUAL REPORT
OF THE
COMMITTEE OF THE ROYAL SOCIETY
FOR THE
PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX,
FOR THE YEAR 1850.

THE PATENT STEEPING SYSTEM.

The system of steeping flax in hot water, brought under the notice of this Society by the late Mr. Schenck, in 1847, has, from the first, had the earnest attention of your Committee. While approving the general principle, they have been cautious in pronouncing a decided opinion upon its details, in consequence of some objections having been made by parties in the North of Ireland. In order fully to investigate the grounds for these objections, they gave the matter in charge to a Sub-Committee, whose report, in which your Committee very fully concur, will be laid before the Society at the present meeting; and they feel confident that it will sufficiently justify you in giving every encouragement, in all parts of Ireland, to the carrying out of the patent system. In the course of these investigations, your Committee, being made acquainted, from time to time, with the results of the various experiments which had been conducted with a view to testing the merits of the plan, considered it advisable to give publicity to them; and, in consequence of their favourable nature, many parties have been induced to establish steeping concerns in different localities. The adoption of the system has been much facilitated by your Committee having induced the late patentee to lower his terms for the right of working.

In addition to those reported last year, as already organised, at Newport and Ballina, County Mayo; Crieve, County Monaghan; and Cregagh, County Down, others have since been established at Latimerstown, County Wexford; Abbeyleix, Queen's County; and Glasslough, County Monaghan; while pre-

parations are being made for others at Omagh, County Tyrone; Strabane, County Derry; Toome, County Antrim; Craigdaragh, Ballinahinch, and Portaferry, County Down; Ballymahon, County Longford; Roscrea, King's County; Millford, County Carlow; Waterford; Mallow, County Cork; Limerick; Tuam, County Galway; and Sligo. It is probable, therefore, that when next year's crop reaches maturity, there will be upwards of twenty steeping concerns ready for work, capable of preparing the produce of 6,000 or 7,000 acres, or about one-tenth of the average breadth of flax at present cultivated in Ireland.

Your Committee have given their best attention to all new projects brought forward for preparing flax fibre for sale, as the Society must be naturally solicitous to render every improvement auxiliary to the advantage of the grower, and to the perfecting of the products of his crop. They have, therefore, carefully investigated each new plan that has been submitted, and, for so far, they believe that nothing appears to combine so many advantages as Schenck's system.

DIVISION OF LABOUR IN FLAX MANAGEMENT.

It was early recognised by your Committee, that great advantage would be derived from the culture of the flax plant, and the preparation of the fibre for sale, being separated into two distinct departments, requiring the farmer simply to prepare the soil, sow the seed, and pull and dry the mature flax stems; and leaving to other parties the steeping, drying, and scutching operations. Being aware that in Belgium a large proportion of the flax crop is purchased by factors from the growers, who steep it in the River Lys, and bring the fibre to market, your Committee, in 1843, encouraged some enterprising and experienced individuals to undertake a similar system in Ireland, and the Society awarded them gold medals in testimoney of its approval. But, although the advantage was apparent of superior quality and handling in the flax thus treated, from a variety of causes, it was not found to be profitable to the undertakers; and there is reason to believe that the system cannot be made practically available in Ireland. Schenck's hot-water method appears, however, to combine equal advantages in the quality of the product, with a fair profit to those who may embark in it as a business undertaking. While it is probable that those farmers,

who are particularly skilful in the management of their crop, may produce as good an article by the ordinary mode, the proportion of such is so small, to the great mass of flax growers, that there can be no reasonable doubt the average quality of flax brought to market from any district would be greatly improved by the adoption of the new system. In the value of the seed, which would be all saved by the new process, a yearly addition of fully a quarter of a million sterling would be made to the produce of the Irish flax crop—a fact, of itself, sufficient to warrant its general adoption. But the most important advantage of this method, as relating to the general extension of flax culture in Ireland, is the immediate market thus afforded to the grower, who is frequently deterred from an extension of his flax crop, by the risk and uncertainty attending the ordinary process of steeping in the open air, as well as by the difficulty of managing a large quantity, all of which has to be steeped at the same time; while, in many districts, the absence of facilities for watering precludes farmers from attempting its culture. In the introduction of the crop where it has not hitherto been grown, the establishment of a steeping concern and scutch-mill at once removes all the difficulties arising from the critical nature of the ordinary processes and the want of a market on the spot for the fibre. With proper instructions in the choice of soils, their preparation, the selection of seed, and the sowing, pulling, and saving of the plant, the farmer will be enabled to produce a good article of flax straw, while the capital, skill, and undivided attention of the steeper will ensure that the fibre is produced in the market in a satisfactory state. Your Committee, therefore, consider that a much more rapid development of flax cultivation will take place all over the country, by the carrying out of Schenck's system, than if the growers were obliged to depend on the old method of manipulation.

SAVING OF FLAXSEED.

The value of the seed of the Irish flax crop, during the ten years of the Society's labours, cannot be estimated at less than £2,000,000. Of this large amount, probably not more than one-tenth has been rendered available, the rest having all been steeped with the flax, and thus utterly lost. Your Committee have been untiring in their exertions to impress upon the farmers the la-

mentable waste arising from this practice; but even yet with only partial success. The reasons which have been instrumental in causing farmers to neglect this advice are various. Many could not be made to believe that the quality of the fibre is not injured by taking off the seed, and this opinion has been strengthened by the operation of rippling being often carelessly performed, with inefficient tools, so as to tear and break the ends of the flax. It was also found difficult, in many cases, to carry on the rippling and steeping of a quantity at the same time. But the chief obstacle arose from the unfavourable weather which frequently sets in, in our climate, at the pulling season, rendering it very difficult to dry the seed properly in the open air, and obliging the growers to kiln-dry it, which, when hurriedly done, causes the seed to shrivel, and leaves it of little comparative value. It has only, therefore, been in certain districts that the saving of flaxseed has become at all general, while in others it has not been practised at all. It is with no little satisfaction, therefore, that your Committee have to call your attention to the fact, that the drying of the flax stems, for Schenck's patent process, necessitates the preserving of the seed, and ensures its being saved of the best possible quality. Flaxseed thus saved can be employed in two ways, either for sowing again or for cattle-feeding. There is an annual import from foreign countries into the United Kingdom of about 650,000 quarters of seed, and 70,000 tons of oilcake made from it, value together about £1,950,000, all of which could readily be supplanted by the home-grown article, while the valuable manure which it produces would return to the soil the greater part of the substances taken from it by the plant. To meet the annual demand for sowing, about 28,000 quarters of seed would be required, at an average value of £112,000. Nor would the money value be the only advantage of producing this at home. It often happens, as in the case of the present year, that enough foreign seed cannot be procured to meet the demand; and while its price is so much enhanced as to place its purchase beyond the means of the poorer class of farmers, much land intended for flax is put in other crops, after the import of seed has been exhausted. It is very gratifying to find that more than 6,000 bushels of seed, from the steeping concerns, were sold last Spring to farmers, and that the produce, as in all instances where *good* home-saved seed is used, was abundant, and generally excelled the crops from foreign seed. Your Committee calculate that nearly 40,000 bushels of Irish seed will be available, for next sowing season, from this and other sources. They look confidently forward to a period not far distant, when the import of foreign seed will be restricted to the quantity necessary to maintain the vigour of the plant, as it has been found that if the same strain of seed be used for successive years, it degenerates in quality; but this might be obviated by changing the seed to different soils, as is done in the case of other plants.

INCREASED CONSUMPTION OF FLAX.

When this Society was founded, in 1841, the Irish flax-spinning trade consisted of about 250,000 spindles. With the increase which has since taken place, and that now making, nearly 390,000 spindles will be in operation next year. The consumption of flax in the Irish factories, in 1841, was estimated at 16,000 tons; on the same data it will be, next year, about 25,000, being an increase of 9,000 tons. Taking 5 cwt. of flax as the average produce per Statute acre, this increase would alone require an additional breadth of 36,000 acres, being more than one-half of the entire Irish growth, while, to supply the Irish flax-spinners would take 100,000 acres, being 30,000 more than the present average sowing. To extend the comparison over the United Kingdom, we find that while the import of foreign flax in the years 1840, 1841, and 1842, averaged, annually, 62,500 tons, in 1848, 1849, and 1850, to the 10th of October in each year, it averaged 83,800, an increase of 21,300 tons; that increase alone being nearly equal to the production of 84,600 acres. If, therefore, the large extent of the imports of foreign flax was dwelt upon in 1841, when the Society was formed, it is evident that the arguments in favour of increasing the extent of flax cultivation in Ireland are strengthened precisely in the ratio of the increase which has since taken place. Your Committee would beg your attention to a fact which cannot be too frequently enforced on public attention, viz., that while Ireland, at present, produces only about 60,000 acres of flax, to supply the existing demand, in the United Kingdom, for the different products of the crop, nearly 500,000 acres would be annually required; and also, that, with the exception of a small proportion of the finer flaxes of Belgium, the entire of the foreign import could be replaced with Irish, to the great advantage of the linen trade, from the superiority of the latter. Nor, in the event of a greatly-increased production of flax in Ireland, is the market limited to the quantity required by the British Isles, for France, Belgium, Spain, the United States of America, and other countries, might be calculated upon, as customers, to a considerable extent.

REPORT OF THE SUB-COMMITTEE APPOINTED TO INVESTIGATE SCHENCK'S PATENT SYSTEM OF STEEPING FLAX.

To the Committee of the Royal Society for the Promotion and Improvement of the Growth of Flax in Ireland.

Your Sub-Committee, on the 31st July last, made a report on the results of their investigations up to that period. They do not consider it necessary, in this, their final report, to copy that document at length, but will simply embody the information it contained in the more extended matter which they are now able to lay before you.

Though the Committee, from their many opportunities of inquiring into the efficacy and advantage of the late Mr. Schenck's process, since that gentleman first brought it before the notice of the Society, in 1847, were quite satisfied about it, they suspended their opinion until facts were brought forward on every point; and your Sub-Committee, in handing in the present report on the objections raised by some parties, will be able to convince you that they do not state a rashly-formed opinion of their own, but rather a publication of the results of experiments conducted by disinterested and competent parties.

As much of the advantage of flax culture depends on being able to economise, to the greatest extent, the crop after being grown, and to reduce the grower's trouble and hazard, whilst ensuring the greatest value, your Sub-Committee hope that their report will prove Schenck's system to realise these desirable points, and will shew that, if proper care be given to the process, something as near certainty will be attained as could be expected, and a much more steady return than by the old, slovenly, and uncertain process of watering, conducted by persons often ignorant of the commonest chemical principles, and generally attended with the loss of the seed—a most valuable part of the crop.

The doubts raised as to Schenck's process were—1st. That the yield of fibre would be less than by the ordinary mode of steeping; 2d. That flax so prepared would be weakened; and 3d. That the linen made from it would not bleach properly.

As respects the first objection, your Sub-Committee are of opinion that, either by the common process or by Schenck's, the yield of fibre will be lessened if the fermentation is allowed to go too far. The uniformity of temperature ensured by the latter would induce the belief that the yield of fibre should be increased. This is borne out by two experiments. In the one conducted at Lisburn, by Mr. Davison, in 1847, 112lbs. of flax straw, after steeping and drying in the ordinary way, gave 20lbs. of scutched fibre; and 112lbs., steeped by Schenck's process and dried, gave 24lbs. In another, tried this year, at Drimoleague, County Cork, from 112lbs. of straw, the old process gave 14lbs. 6ozs., and Schenck's, 17lbs. 11½ozs. The increased yield in the first experiment was 20 per cent., and in the latter, 23½ per cent., in favour of Schenck's method. As respects the quality of the fibre, the result was equally in favour of the latter system. In the first experiment, the flax steeped in the ordinary way spun to 96 lea yarn, and that by Schenck's system, to 101 lea. In the second, the ordinary gave 60 lea, and Schenck's 70. A further experiment was communicated by Messrs. Marshall & Co., of Leeds, some flax straw grown in Holland being the material employed. What was steeped in Holland, in the usual way, gave 61lbs. 1oz., hackled; and two lots of the same straw, steeped by Schenck's system, in two different concerns, gave, respectively, 62lbs. 4ozs. and 64lbs. per cwt.; the value of the fibre, per acre, being, of the common steeped, £9 8s, and of the patent steeped, averaging £10 12s.

With respect to the second objection, that the flax might be weakened, the same remark may be made, that fermentation, conducted on a systematic and scientific plan, was not likely to weaken the fibre more than the same amount by an uncertain process. And, although the fibre might often be made *stronger* by the old plan, when the steeping was not carried far enough, yet, on the other hand, it was frequently over-steeped, and consequently, *weakened*. In addition to the favourable report of spinners who had produced yarn from Schenck's flax, of fair strength, the following results of experiments were laid before them:—Several samples of fibre, of full strength, steeped on the patent system, in different places; samples of threads from Messrs. Marshall & Co., of Leeds, unbleached, bleached, and dyed, made from the patent steeped flax to which reference has been made, all being of good, strong quality; a sample of 140's weft yarn, from Messrs. S. K. Mulholland & Hinds; and a sample of boiled yarn for heavy linens, from Messrs. Dunbar, M'Master, & Co., of Gilford. All these were considered of fair, average strength. It is evident to your Committee that flax steeped by the patent process can be made either strong or weak, it being in the power of the operator, by increasing or decreasing the time of steeping, or by raising or lowering the temperature of the water, to make whatever quality suited the market, or would best remunerate him. They submit, that *strength* is not what will be most profitable to the grower, but that *fineness of quality, with softness*, will often remunerate him much better, and his interest will be to produce what is most in demand and highest priced. At this point the duty of the Society ends; whatever will best remunerate the *grower* being what it is their duty to point out, and it is for the *spinner* to choose strong or weak, as he may require it for different customers.

As to the third objection, that the patent steeped flax might not bleach well, the samples of yarn, thread, lawn, and linen, produced at the present meeting, are sufficient evidence of its groundlessness. The following letter from an eminent bleaching firm is still further satisfactory:—

"*Lisburn*, 28*th August*, 1850.

"MESSRS. S. K. MULHOLLAND & HINDS,

"DEAR SIRS,—We have the pleasure to return, finished, the two pieces of linen made from flax steeped on Schenck's plan, which you sent us to bleach; and, during the process, we found the advantage more decided than with the lighter fabrics you sent us, some time ago. These, with other opportunities of judging, have caused us to conclude that the general introduction of Schenck's patent process would be a step in the right direction, unless objections can be substantiated unconnected with the bleaching department of the linen trade.—Yours, very truly,

"RICHARDSON & Co."

Thus your Sub-Committee believe that all rational objections have been satisfactorily met. The general question having now been put in a favourable position, it rests with others to pursue the details more minutely; and it is hoped that they will be careful to note and make known both improvements and sources of failure, if any arise, so that the public may benefit by the results of their experience.

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parations are being made for others at Omagh, County Tyrone; Strabane, County Derry; Toome, County Antrim; Craigdaragh, Ballinahinch, and Portaferry, County Down; Ballymahon, County Longford; Roscrea, King's County; Millford, County Carlow; Waterford; Mallow, County Cork; Limerick; Tuam, County Galway; and Sligo. It is probable, therefore, that when next year's crop reaches maturity, there will be upwards of twenty steeping concerns ready for work, capable of preparing the produce of 6,000 or 7,000 acres, or about one-tenth of the average breadth of flax at present cultivated in Ireland.

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It was early recognised by your Committee, that great advantage would be derived from the culture of the flax plant, and the preparation of the fibre for sale, being separated into two distinct departments, requiring the farmer simply to prepare the soil, sow the seed, and pull and dry the mature flax stems; and leaving to other parties the steeping, drying, and scutching operations. Being aware that in Belgium a large proportion of the flax crop is purchased by factors from the growers, who steep it in the River Lys, and bring the fibre to market, your Committee, in 1843, encouraged some enterprising and experienced individuals to undertake a similar system in Ireland, and the Society awarded them gold medals in testimoney of its approval. But, although the advantage was apparent of superior quality and handling in the flax thus treated, from a variety of causes, it was not found to be profitable to the undertakers; and there is reason to believe that the system cannot be made practically available in Ireland. Schenck's hot-water method appears, however, to combine equal advantages in the quality of the product, with a fair profit to those who may embark in it as a business undertaking. While it is probable that those farmers,

who are particularly skilful in the management of their crop, may produce as good an article by the ordinary mode, the proportion of such is so small, to the great mass of flax growers, that there can be no reasonable doubt the average quality of flax brought to market from any district would be greatly improved by the adoption of the new system. In the value of the seed, which would be all saved by the new process, a yearly addition of fully a quarter of a million sterling would be made to the produce of the Irish flax crop—a fact, of itself, sufficient to warrant its general adoption. But the most important advantage of this method, as relating to the general extension of flax culture in Ireland, is the immediate market thus afforded to the grower, who is frequently deterred from an extension of his flax crop, by the risk and uncertainty attending the ordinary process of steeping in the open air, as well as by the difficulty of managing a large quantity, all of which has to be steeped at the same time; while, in many districts, the absence of facilities for watering precludes farmers from attempting its culture. In the introduction of the crop where it has not hitherto been grown, the establishment of a steeping concern and scutch-mill at once removes all the difficulties arising from the critical nature of the ordinary processes and the want of a market on the spot for the fibre. With proper instructions in the choice of soils, their preparation, the selection of seed, and the sowing, pulling, and saving of the plant, the farmer will be enabled to produce a good article of flax straw, while the capital, skill, and undivided attention of the steeper will ensure that the fibre is produced in the market in a satisfactory state. Your Committee, therefore, consider that a much more rapid development of flax cultivation will take place all over the country, by the carrying out of Schenck's system, than if the growers were obliged to depend on the old method of manipulation.

SAVING OF FLAXSEED.

The value of the seed of the Irish flax crop, during the ten years of the Society's labours, cannot be estimated at less than £2,000,000. Of this large amount, probably not more than one-tenth has been rendered available, the rest having all been steeped with the flax, and thus utterly lost. Your Committee have been untiring in their exertions to impress upon the farmers the la-

parations are being made for others at Omagh, County Tyrone; Strabane, County Derry; Toome, County Antrim; Craigdaragh, Ballinahinch, and Portaferry, County Down; Ballymahon, County Longford; Roscrea, King's County; Millford, County Carlow; Waterford; Mallow, County Cork; Limerick; Tuam, County Galway; and Sligo. It is probable, therefore, that when next year's crop reaches maturity, there will be upwards of twenty steeping concerns ready for work, capable of preparing the produce of 6,000 or 7,000 acres, or about one-tenth of the average breadth of flax at present cultivated in Ireland.

Your Committee have given their best attention to all new projects brought forward for preparing flax fibre for sale, as the Society must be naturally solicitous to render every improvement auxiliary to the advantage of the grower, and to the perfecting of the products of his crop. They have, therefore, carefully investigated each new plan that has been submitted, and, for so far, they believe that nothing appears to combine so many advantages as Schenck's system.

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mentable waste arising from this practice; but even yet with only partial success. The reasons which have been instrumental in causing farmers to neglect this advice are various. Many could not be made to believe that the quality of the fibre is not injured by taking off the seed, and this opinion has been strengthened by the operation of rippling being often carelessly performed, with inefficient tools, so as to tear and break the ends of the flax. It was also found difficult, in many cases, to carry on the rippling and steeping of a quantity at the same time. But the chief obstacle arose from the unfavourable weather which frequently sets in, in our climate, at the pulling season, rendering it very difficult to dry the seed properly in the open air, and obliging the growers to kiln-dry it, which, when hurriedly done, causes the seed to shrivel, and leaves it of little comparative value. It has only, therefore, been in certain districts that the saving of flaxseed has become at all general, while in others it has not been practised at all. It is with no little satisfaction, therefore, that your Committee have to call your attention to the fact, that the drying of the flax stems, for Schenck's patent process, necessitates the preserving of the seed, and ensures its being saved of the best possible quality. Flaxseed thus saved can be employed in two ways, either for sowing again or for cattle-feeding. There is an annual import from foreign countries into the United Kingdom of about 650,000 quarters of seed, and 70,000 tons of oilcake made from it, value together about £1,950,000, all of which could readily be supplanted by the home-grown article, while the valuable manure which it produces would return to the soil the greater part of the substances taken from it by the plant. To meet the annual demand for sowing, about 28,000 quarters of seed would be required, at an average value of £112,000. Nor would the money value be the only advantage of producing this at home. It often happens, as in the case of the present year, that enough foreign seed cannot be procured to meet the demand; and while its price is so much enhanced as to place its purchase beyond the means of the poorer class of farmers, much land intended for flax is put in other crops, after the import of seed has been exhausted. It is very gratifying to find that more than 6,000 bushels of seed, from the steeping concerns, were sold last Spring to farmers, and that the produce, as in all instances where *good* home-saved seed is used, was abundant, and generally excelled the crops from foreign seed. Your Committee calculate that nearly 40,000 bushels of Irish seed will be available, for next sowing season, from this and other sources. They look confidently forward to a period not far distant, when the import of foreign seed will be restricted to the quantity necessary to maintain the vigour of the plant, as it has been found that if the same strain of seed be used for successive years, it degenerates in quality; but this might be obviated by changing the seed to different soils, as is done in the case of other plants.

INCREASED CONSUMPTION OF FLAX.

When this Society was founded, in 1841, the Irish flax-spinning trade consisted of about 250,000 spindles. With the increase which has since taken place, and that now making, nearly 390,000 spindles will be in operation next year. The consumption of flax in the Irish factories, in 1841, was estimated at 16,000 tons; on the same data it will be, next year, about 25,000, being an increase of 9,000 tons. Taking 5 cwt. of flax as the average produce per Statute acre, this increase would alone require an additional breadth of 36,000 acres, being more than one-half of the entire Irish growth, while, to supply the Irish flax-spinners would take 100,000 acres, being 30,000 more than the present average sowing. To extend the comparison over the United Kingdom, we find that while the import of foreign flax in the years 1840, 1841, and 1842, averaged, annually, 62,500 tons, in 1848, 1849, and 1850, to the 10th of October in each year, it averaged 83,800, an increase of 21,300 tons; that increase alone being nearly equal to the production of 84,600 acres. If, therefore, the large extent of the imports of foreign flax was dwelt upon in 1841, when the Society was formed, it is evident that the arguments in favour of increasing the extent of flax cultivation in Ireland are strengthened precisely in the ratio of the increase which has since taken place. Your Committee would beg your attention to a fact which cannot be too frequently enforced on public attention, viz., that while Ireland, at present, produces only about 60,000 acres of flax, to supply the existing demand, in the United Kingdom, for the different products of the crop, nearly 500,000 acres would be annually required; and also, that, with the exception of a small proportion of the finer flaxes of Belgium, the entire of the foreign import could be replaced with Irish, to the great advantage of the linen trade, from the superiority of the latter. Nor, in the event of a greatly-increased production of flax in Ireland, is the market limited to the quantity required by the British Isles, for France, Belgium, Spain, the United States of America, and other countries, might be calculated upon, as customers, to a considerable extent.

REPORT OF THE SUB-COMMITTEE APPOINTED TO INVESTIGATE SCHENCK'S PATENT SYSTEM OF STEEPING FLAX.

To the Committee of the Royal Society for the Promotion and Improvement of the Growth of Flax in Ireland.

Your Sub-Committee, on the 31st July last, made a report on the results of their investigations up to that period. They do not consider it necessary, in this, their final report, to copy that document at length, but will simply embody the information it contained in the more extended matter which they are now able to lay before you.

Though the Committee, from their many opportunities of inquiring into the efficacy and advantage of the late Mr. Schenck's process, since that gentleman first brought it before the notice of the Society, in 1847, were quite satisfied about it, they suspended their opinion until facts were brought forward on every point; and your Sub-Committee, in handing in the present report on the objections raised by some parties, will be able to convince you that they do not state a rashly-formed opinion of their own, but rather a publication of the results of experiments conducted by disinterested and competent parties.

As much of the advantage of flax culture depends on being able to economise, to the greatest extent, the crop after being grown, and to reduce the grower's trouble and hazard, whilst ensuring the greatest value, your Sub-Committee hope that their report will prove Schenck's system to realise these desirable points, and will shew that, if proper care be given to the process, something as near certainty will be attained as could be expected, and a much more steady return than by the old, slovenly, and uncertain process of watering, conducted by persons often ignorant of the commonest chemical principles, and generally attended with the loss of the seed—a most valuable part of the crop.

The doubts raised as to Schenck's process were—1st. That the yield of fibre would be less than by the ordinary mode of steeping; 2d. That flax so prepared would be weakened; and 3d. That the linen made from it would not bleach properly.

As respects the first objection, your Sub-Committee are of opinion that, either by the common process or by Schenck's, the yield of fibre will be lessened if the fermentation is allowed to go too far. The uniformity of temperature ensured by the latter would induce the belief that the yield of fibre should be increased. This is borne out by two experiments. In the one conducted at Lisburn, by Mr. Davison, in 1847, 112lbs. of flax straw, after steeping and drying in the ordinary way, gave 20lbs. of scutched fibre; and 112lbs., steeped by Schenck's process and dried, gave 24lbs. In another, tried this year, at Drimoleague, County Cork, from 112lbs. of straw, the old process gave 14lbs. 4ozs., and Schenck's, 17lbs. 11½ozs. The increased yield in the first experiment was 20 per cent., and in the latter, 23¾ per cent., in favour of Schenck's method. As respects the quality of the fibre, the result was equally in favour of the latter system. In the first experiment, the flax steeped in the ordinary way spun to 96 lea yarn, and that by Schenck's system, to 101 lea. In the second, the ordinary gave 60 lea, and Schenck's 70. A further experiment was communicated by Messrs. Marshall & Co., of Leeds, some flax straw grown in Holland being the material employed. What was steeped in Holland, in the usual way, gave 61lbs. 1oz., hackled; and two lots of the same straw, steeped by Schenck's system, in two different concerns, gave, respectively, 62lbs. 4ozs. and 64lbs. per cwt.; the value of the fibre, per acre, being, of the common steeped, £9 8s, and of the patent steeped, averaging £10 12s.

With respect to the second objection, that the flax might be weakened, the same remark may be made, that fermentation, conducted on a systematic and scientific plan, was not likely to weaken the fibre more than the same amount by an uncertain process. And, although the fibre might often be made *stronger* by the old plan, when the steeping was not carried far enough, yet, on the other hand, it was frequently over-steeped, and consequently, *weakened.* In addition to the favourable report of spinners who had produced yarn from Schenck's flax, of fair strength, the following results of experiments were laid before them:—Several samples of fibre, of full strength, steeped on the patent system, in different places; samples of threads from Messrs. Marshall & Co., of Leeds, unbleached, bleached, and dyed, made from the patent steeped flax to which reference has been made, all being of good, strong quality; a sample of 140's weft yarn, from Messrs. S. K. Mulholland & Hinds; and a sample of boiled yarn for heavy linens, from Messrs. Dunbar, M'Master, & Co., of Gilford. All these were considered of fair, average strength. It is evident to your Committee that flax steeped by the patent process can be made either strong or weak, it being in the power of the operator, by increasing or decreasing the time of steeping, or by raising or lowering the temperature of the water, to make whatever quality suited the market, or would best remunerate him. They submit, that *strength* is not what will be most profitable to the grower, but that *fineness of quality, with softness,* will often remunerate him much better, and his interest will be to produce what is most in demand and highest priced. At this point the duty of the Society ends; whatever will best remunerate the *grower* being what it is their duty to point out, and it is for the *spinner* to choose strong or weak, as he may require it for different customers.

As to the third objection, that the patent steeped flax might not bleach well, the samples of yarn, thread, lawn, and linen, produced at the present meeting, are sufficient evidence of its groundlessness. The following letter from an eminent bleaching firm is still further satisfactory:—

"*Lisburn,* 28*th August,* 1850.

"MESSRS. S. K. MULHOLLAND & HINDS,

"DEAR SIRS,—We have the pleasure to return, finished, the two pieces of linen made from flax steeped on Schenck's plan, which you sent us to bleach; and, during the process, we found the advantage more decided than with the lighter fabrics you sent us, some time ago. These, with other opportunities of judging, have caused us to conclude that the general introduction of Schenck's patent process would be a step in the right direction, unless objections can be substantiated unconnected with the bleaching department of the linen trade.—Yours, very truly,

"Richardson & Co."

Thus your Sub-Committee believe that all rational objections have been satisfactorily met. The general question having now been put in a favourable position, it rests with others to pursue the details more minutely; and it is hoped that they will be careful to note and make known both improvements and sources of failure, if any arise, so that the public may benefit by the results of their experience.

FINLAY, PRINTER, BELFAST.

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FLAX APPARATUS.

RICHARD ROBINSON,

OF BELFAST,

OFFERS TO FIT UP, IN ANY PART OF THE UNITED KINGDOM, A COMPLETE SET OF APPARATUS AND MACHINES FOR THE

Seeding, Cleaning, Steeping, and Drying of Flax,

PREPARATORY TO ROLLING AND SCUTCHING,

As fitted up by him in the concerns working under Schenck's Patent.

Belfast, January 1, 1851.

MACADAM & CO.'S

IMPROVED SCUTCHING MACHINERY.

ALL THE MOST IMPROVED KINDS OF

Breaking, Scutching, & Finishing Machinery,

For preparing the Flax Fibre from the Straw, after the hot water process, supplied by the Makers.

MACADAM BROTHERS & Co., Engineers,
SOHO FOUNDRY, BELFAST.

P.S.—Competent Workmen provided, if required, to accompany the machinery to any part of the country, and act as Scutchers; also, Foremen Scutchers, to take charge of mills and instruct others.

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THE FLAX MOVEMENT;

ITS NATIONAL IMPORTANCE AND ADVANTAGES,

WITH DIRECTIONS FOR THE PREPARATION OF

PARSONS LIBRARY
University of
MICHIGAN

FLAX-COTTON,

AND

THE CULTIVATION OF FLAX.

BY THE
CHEVALIER CLAUSSEN.

Third Edition, with Additions.

LONDON:
EFFINGHAM WILSON, 11, ROYAL EXCHANGE;
JAMES RIDGWAY, 169, PICCADILLY;
AND
JAMES McGLASHAN, 52, SACKVILLE STREET, DUBLIN.

Price One Shilling.

NOTE TO THE THIRD EDITION.

In issuing a new Edition, I have merely to make one alteration; that is as regards the price at which Flax can be prepared as Cotton. Practical experience enables me now to say that British Cotton may be manufactured at 3*d.*, and even as low as 2¼*d.* per lb. This is stated in a prospectus issued for establishing a Company for the manufacture of the article, which I now append. I also annex the remarks from the Morning Chronicle of the 1st August, reviewing the articles I have exposed at the Exhibition. Similar favourable remarks have been bestowed by the Press generally, but which it is needless to recapitulate.

The natural sagacity of the Americans is also directed to this subject, as may be seen by two extracts made from their newspapers.

P. C.

THE FLAX MOVEMENT

AND

ITS NATIONAL IMPORTANCE.

THE subject of an extension of flax culture in the United Kingdom, is one which, at the present moment, engrosses a considerable share of attention, amongst nearly all classes of the community. The present government appears to be deeply sensible of its importance; for in a communication from the Board of Trade to some gentlemen who had applied for a charter of incorporation for a company to be formed for the purpose of promoting the growth of flax in Ireland, my lords stated that it was not usual to grant charters of a commercial character in such cases, but

> "That taking into consideration the present circumstances of Ireland, and being strongly impressed with the great importance of encouraging at this time, by every means, the cultivation of flax in that country, they would be disposed to relax the rules by which they are governed under ordinary circumstances."

Lord Clarendon, in an address delivered by him on the occasion of his visit to Belfast in September last, said,

> "The great and growing importance of flax in Ireland cannot, in my opinion, be over estimated; and the more we consider it in its agricultural, manufacturing and commercial bearings on our welfare, the more apparent will, I think, become the necessity aud advantage of its extended cultivation, in a country where soil and climate are so peculiarly adapted to its production; and I rejoice to think that attention is now so generally turned to this subject, and at a moment when flax is most likely to be remunerative to the grower.
>
> "The demand for our linen manufactures is rapidly rising, and the supply of cotton is not only deficient, but, owing to various circumstances, I fear that this supply will, henceforward, not be equal to our demand, and that we cannot reckon upon the quantity of cotton we require at the prices which will enable us to extend our manufactures, or even to keep them up to their present amount. But, by extending the growth of flax, we may not only benefit the manufactures of Ireland by a more abundant supply of raw material, but we may also furnish the manufacturers of cotton—not with a substitute, but with an auxiliary to cotton—with a material which may liberate cotton from some of its present uses."

Mr. G. R. Porter, the Secretary to the Board of Trade, in a very able paper read by him before the British Association, at its last meeting in Edinburgh, on the statistics of the cotton trade in Great Britain, after referring to the continued and increasing deficiency of the supply of that article from the United States, said,

> "The uneasiness which it is natural to feel, under the circumstances here described, has led to the enquiry, as diligently and as carefully as opportunity has allowed, whether some substitute or auxiliary may not be called into action, which shall meet the evil that threatens us; and this, it is suggested, may be found in a kindred branch of manufacture—that of flax. . . . . . Hitherto, we have in this kingdom been greatly dependent on our foreign importations for supplies of flax; and, while the law imposed restrictions upon the importations of grain for human food, there existed a kind of moral impediment in the way of increasing our home growth of articles for any purpose not of equal primary necessity. That impediment is now removed, and there can be no reason given why our fields should not be henceforth used for the production of any article that promises an adequate profit to the farmer. It is especially desirable so to apply the productive power of the soil for the supply of articles as indispensable to the support of millions of our people as corn itself; and an additional inducement to the growth of flax, beyond that offered by other articles, may be found in the fact, that to bring it to the same condition as that in which it is usually imported from foreign countries, calls for the employment of a considerable amount of human labour. There is no part of the United Kingdom in which the flax plant cannot be successfully cultivated."

The Royal Agricultural Society of England, feeling the importance of the subject in a national point of view, has already in the present session, devoted three of its weekly councils to its consideration and discussion; and upon two of these occasions, the respected chairman, Mr. Pusey, M.P., expressed a hope that recent discoveries connected with the preparation of flax, would "constitute a new bond of union between the farmer and the manufacturer of this country." The *Times* in its notice of the proceedings of the society, states—

> "That the greatest interest was manifested in the proceedings, which must be regarded of unusual importance to the agricultural interest, especially at the present time, when it becomes so necessary for the cultivators of the soil to look around them, and re-model their system of farming so as to restore its remunerative and prosperous character as a branch of national industry."

The *Morning Chronicle*, which has taken the lead on the subject, has, for several months past, been endeavouring to awaken the attention of agriculturists to the great advantage which, both in a national and individual point of view, would result from an extension of flax culture; and in the first of a series of very able articles on the subject, published in that journal, it states—

> "At the present time, when our manufacturers are searching far and wide for such a supply of raw materials, as many render them in some degree independent of the chances of unfavorable seasons in other countries; and when our agriculturists are complaining of low prices, the subject of an extended flax cultivation is one well worthy of most serious consideration."

A considerable amount of interest has also been felt on the subject by the local press throughout the country.

The question of flax-culture is one which is not now for the first time brought before the public, on the contrary, its importance has been recognised from the earliest times, and it has formed the subject of repeated legislative enactments at various periods, from the time of the 24th of Henry VIII., when it was enjoined upon every person "occupying land, apt for tillage, should for every sixty acres, sow one rood, at least, with flax," down to the year 1809, when a sum of £20,000 was appropriated to encourage the saving of flax seed in Ireland. The subject has also been repeatedly brought before the public during the last ten years, in the annual reports of the Royal Irish Flax Society, and in the various publications of Mr. Warnes, and other persons who have applied themselves to its cultivation.

The object of the following pages is to set forth a few of the leading features connected with this great movement:—the new and varied uses to which it has been found that flax is applicable, and the complete removal of those prejudices and objections to its growth and preparation, which up to the present time have been so generally entertained by the agriculturists of this country.

OBJECTIONS TO THE GROWTH OF FLAX CONSIDERED.

It may very naturally be asked, Why, if the cultivation of flax be so advantageous, it has not been more generally carried out in this country? The answer to such an inquiry may readily be found in the difficulties which have hitherto existed with respect to its preparation; and the uncertainty of the market for the produce when so prepared. Objections, founded on the character of the crop, and the comparatively high prices of wheat, secured to the grower have also, no doubt, had some influence in preventing the cultivation of a plant which was considered to be highly exhaustive, and which had not the advantage of a protective system. With regard to the latter of these causes, recent changes in our commercial policy, of the propriety of which no opinion is here expressed, have, however, now placed the flax and the corn crops upon the same footing, and the agriculturist in this altered state of circumstances, will doubtless devote himself to the production of any article that promises an adequate return for his labour and capital. The advantages resulting from the growth of flax, as compared with other crops, will be treated of in a subsequent portion of these pages.

But a very general belief appears to prevail among our agriculturists, that flax is an exceedingly exhaustive crop. The opinion is one which has been handed down almost from time immemorial, and the clauses which in many cases are introduced into the agreements and leases for agricultural tenancies, forbidding the culture of flax, hemp, and woad, have no doubt tended to strengthen this conviction in the minds of those who have not possessed the opportunity of practically testing the truth of this very current opinion. It is most undoubtedly true that flax, in itself, like all other crops, whether cereal or others, is certainly an exhaustive one: few crops are, however, more exhausting than wheat; but the farmer does not refuse to grow it on that account, as he knows that a great proportion of the crop is usually returned to the soil. Now, there are two modes of testing the accuracy of the opinion with respect to the injurious effects of the flax crop, viz., by chemical analysis of the constituents of the plant, and by that still more satisfactory and convincing test—the result of practical experience. Tried by either or both of these, it will be found, under a judicious mode of treatment, analogous to that pursued by the grower with respect to his other crops, that flax, so far from being an injurious, will be found, independently of its other advantages, to be of greater value than any other crop in keeping the land in a profitable state of productiveness, and preventing the possibility of its deterioration.

If the construction of the plant be closely examined, it will be found that those portions of it which absorb the alkalies, and the nutritive properties of the soil, are those which are not required for the purpose of manufacture, viz., the woody part of the plant, the resinous matter, and the seed. The capsules of the seeds, the husks of the capsules, and the seeds, contain a very large proportion of nitrogen and phosphoric acid, and may consequently be advantageously employed for the purposes of manure or for the feeding of cattle. The fibre of the plant, which is that portion required for manufacture, consists of about 47 parts of carbon in 100, united to the elements of water—in fact, oxygen, hydrogen, and carbon are its principal constituent parts, and they are derived not from the soil but from the atmosphere. 100 lbs. of flax fibre has been found by recent experiments to contain not more upon an average than 2 lbs. of mineral matters, including lime, magnesia, oxide of iron, carbonic, phosphoric, and sulphuric acid, and silica.

In cases where in the course of preparation of the flax, the seed and the whole of those portions of the plant which have absorbed the nutritive matters from the soil, are destroyed by steeping, and where nothing is left to be returned to the soil, there can be no doubt that the crop is an exceedingly exhaustive one; and in the present advanced state of agriculture, it would be a vain and absurd attempt to endeavour to induce the farmer to grow flax upon such conditions. The last report of the Royal Irish Flax Society gives some particulars of the flax crops of fifty-one farmers in the county of Down, not one of whom saved the seed; and although the average gain was £7 1*s.* 4½*d.* per acre, their example is one which is not likely to be very generally followed by enlightened agriculturists.

But apart from the deductions of chemical science, or theories founded upon the structure of the plant, the recent proceedings of the Royal Agricultural Society have completely set the question at rest. Mr. Beale Brown, who has devoted the last seven years to the culture and preparation of flax in the county of Gloucester, stated at the meeting of the society on the 26th of February, that flax, deriving as it did, a large amount of its nutriment from the atmosphere, was the least exhausting crop that could be put into the ground, provided the manure from the seed and refuse were retained on the land, and only the flax fibre itself carried off; and he had reason to believe that this opinion was now entertained by all parties connected practically with the cultivation of the flax crop.

Mr. Druce of Ensham in Oxfordshire, also stated that flax was not an exhaustive crop; that he grew turnips in the same year on his flax land without manure, and that his son had found that some wheat sown after flax, was one of the best crops he had ever grown. In Somersetshire it is a standing proverb that "good wheat crops always follow flax." Lord Monteagle also gave the result of his own experience, in connection with the growth of flax upon his land in Ireland, and said that some of the land which he had sown with it, had been previously rather exhausted, but by cultivating the crop well, that land had become better than any other on his estate; no meadow indeed, yielded such capital grass as that on which the flax had been grown.

The opinions of Sir Richard A. O'Donnell, one of the largest flax-growers in Ireland, and of Mr. Warnes, who has paid great attention to the subject in the county of Norfolk, were also stated in a paper read before the society by Mr. Edward M'Dermott, a copy of which will be found at page 22.

A third great obstacle which has hitherto stood in the way of an extended cultivation of flax, has been the great trouble and annoyance to which the farmer was compelled to submit, in order to prepare his produce for market. The Royal Irish Flax Society has laboured strenuously to encourage and promote improvements in the various processes connected with steeping flax. It is unnecessary here to refer to the various modes hitherto adopted, and now recommended, or the imperfections and difficulties which they present to the grower, as the reader will find them very clearly stated in subsequent pages.

The reluctance and growing disinclination to cultivate flax even in Ireland, which is traceable, to a certain extent, to the difficulty connected with its preparation is most strikingly shown in the fact, that a society established in that country in 1841, for the purpose of promoting and encouraging the growth of flax, which numbers "among its members, the nobility and landed gentry on one hand, and on the other nearly all the individuals engaged in the spinning of yarn and manufacture of linen, with a considerable proportion of the wealthy English and Scotch flax spinners," which for the last three years has been backed by annual grants of the public money, and which has devoted "ten years of unremitting exertions" to the subject, has, so far from being enabled to accomplish the object for which it was formed, that it has not been able to arrest the decrease in the cultivation of flax in Ireland, from 83,000 acres in 1841, to 60,000 in 1849. This rapid decrease of flax culture has also taken place contemporaneously with an increase, unparalleled in the history of the linen manufactures, the raw materials to supply which have been obtained from the foreigner instead of the home producer. The *Morning Chronicle* has the following remarks with reference to this state of things:

"Perhaps the most remarkable feature connected with the cultivation of flax in this country is, that almost in the same proportion in which the demand for flax has increased, the supply has diminished. In 1757, before the first machinery for spinning flax was erected in Great Britain, Ireland consumed all the flax which she produced and imported from foreign countries, to the value of nearly £140,000. In 1816, during the existence of the Linen Board, Ireland, instead of being a flax-importing country, actually became an exporting country to the extent of £72,500. In the year 1841, there were in Ireland employed in the linen trade 41 mills, with 260,000 spindles; there are in the present year 73 mills, with 339,000 spindles, and adding the new mills now being built, and the additions of machinery now making to existing concerns, there will be by the end of this year about 400,000 spindles in operation. Comparing the relative proportion of acres of flax grown with the number of spindles at work, it would appear that in 1841 the number of spindles was 3·1 times greater than the number of acres of flax, whereas in 1849, they were about 5·6 times greater. The cultivation of flax has fallen off in Ireland since 1841, nearly 25,000 acres, while the quantity grown in 1849, did not amount to one-half of that grown in 1844."

The Royal Flax Society has done all in its power to produce a different result. Every improvement in the mode of steeping, or in the after-treatment of flax, has received some share of its attention; and directions of the simplest and plainest character have been widely distributed over the country, for the purpose of enabling the grower to avail himself of the advantages which they offered.

The society has also, with the most ready zeal, come forward upon the bare announcement of any plan, by which the grower could be relieved from this obnoxious process, and which it conceived was, therefore, calculated to mislead the public, and denounced the ignorance and folly of those who supported it. Indeed, so great has been the vigilance and care exercised by the society, that their condemnation has, in several instances, preceded investigation. At a meeting of the County of Cork Flax Association, the subject of a new mode of preparing flax, by which the grower would be spared the trouble of steeping, was referred to by one of the speakers, when Professor Murphy, who attended on the part of the parent society, said, that "the Flax Society had reported against the process, and were then going to investigate the matter." Despite all these laudable exertions, however, the cultivation of flax has greatly fallen off, and, instead of that lively interest which it would have been desirable to have seen displayed on the subject by the cultivators of land in Ireland, there appeared, up to a very recent period, when the probability was announced of new markets being opened for the produce, a determination on the part of some of the principal growers, to discontinue altogether the growth of flax. This feeling of apathy on the subject is not confined to the growers of flax merely; but it is also to be regretted that, even among the supporters of a society calculated to be of such great service to the country, the same feeling very generally prevails, as is evidenced by the fact of the decrease in the amount of the subscriptions and donations, during the last as compared with previous years. Although many instances might be quoted to shew, that considerable profit and advantage would result to the grower from the preparation of his flax by the ordinary mode of steeping, still the great inconvenience and trouble attendant upon the process would prevent that general cultivation of the crop which it would be desirable to witness in order to secure for our agriculturists and manufacturers that amount of independence of foreign countries for the supply of the raw material which they do not at present possess. It is vain to expect any increased cultivation of flax while such a state of things exists as that described by M. Payen, the celebrated French chemist, who was last year sent over by the French Government to report upon the subject of flax-cultivation in Ireland. "While personally inspecting," says that gentleman in his report to the Government, "from the 15th to the 20th of Sept., the flax fields in Ireland, I found all the inconvenience of the old system of management in a high degree of intensity, in the serious inconveniences of the watering in stagnant pools and of the spreading of the putrid products of this most disagreeable operation, diffusing abroad insupportable exhalations." It will be shewn presently that by the use of machinery of a very simple and inexpensive character,* that the grower of flax may be spared all this inconvenience, and be enabled to send his produce to a certain and remunerative market, without the necessity of steeping it, and may also avoid those evils which, under the flax factorship system recently introduced into Ireland, have inflicted so much injury upon the flax cause, and discouraged many of the warmest of its friends in that country.

But a fourth reason, why notwithstanding the profitable nature of the crop, flax has been grown to so small an extent, is to be found in the uncertainty of the market which has hitherto existed for the article. Several striking instances are given of this in the report of the proceedings before the Royal Agricultural Society already referred to. Lord Monteagle, who attended the meeting as one of the members of a deputation from the Royal Irish Flax Society, in referring to his endeavours to cultivate flax on his home farm as well as upon those of his tenantry in the south of Ireland, said,

> "He had been induced, more to restore the growth of flax in that part of Ireland than to introduce it, as the cultivation had ceased on account of the want of markets for the produce. His tenants, too, were induced to join in the cause, as well as Lord Devon and other influential landowners of the district. They all succeeded, grew good flax, and the specimens received the favourable notice of the Flax Society, his lordship's sample being valued at £63 only at that time on account of the lowness of prices, but which would now fetch £100. His tenants did not, however, succeed so well as himself; they could not transport the flax in its bulk, they had no water-power, and he was unwilling to erect steam-power till assured of a market; the

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* This machine may be seen at 26, Gresham-street, London

consequence was, that he had to take all the flax off the hands of his tenants, so that at that time he had more stacks of flax than of wheat on his farm, with no means of turning them to account."

Several other growers of flax in England made similar complaints. Mr. Hammond of Norfolk, said, that not finding any market, he had thatched several of his cottages with the straw, and a more beautiful thatch he never saw. Mr. Fuller, M.P. had also grown flax in Sussex, but had "no better success in getting it off his hands; and when he offered it to a large manufacturing house, he was told they could only give him linen in return for it." At a subsequent meeting of the Agricultural Society, on the 12th of March, Mr. Fuller laid before it his balance sheet of the cultivation of flax, from which it appears that he had succeeded in selling his flax in the straw—the produce of one acre—for three pounds; and that his profits, upon the one acre, was £8 6s. 0d. The value of the seed alone—24 bushels, at 8s. a bushel—being £9 12s. 0d. Mr. Shelley also stated that in Sussex it could not be turned into money, there was no difficulty in farmers growing flax, the only difficulty being to get a market for it; if it could be made a marketable article, there would be no want of growers.

DISTINGUISHING FEATURES OF THE PRESENT FLAX GROWING MOVEMENT.

Having noticed the present depressed state of flax-culture in the United Kingdom, and some of the causes which have led thereto, I proceed to notice that altered state of circumstances which gives its peculiar and distinguishing character to the present movement. This consists in the opening up of new and extensive markets for flax, consequent upon the discovery that it can be advantageously employed in every branch of the textile manufactures of the country, and that its preparation is now so far simplified, as to enable the grower to obtain a ready and remunerative market in any form in which he may prefer to dispose of his crop. Of the extent and character of the new markets now open to the flax-growers of the United Kingdom, and which are not yet possessed by the foreign producers, it is unnecessary to say more, than that one half of the present demand for cotton may be advantageously supplied by home-grown flax. This subject is gone into more fully at page 24. The importance and value to the landed and agricultural interests of this new demand for an article which may be profitably produced by them, was referred to by Sir James Graham, in the House of Commons, in the debate on agricultural distress, on the 13th of February. The right Hon. Baronet had been present the previous day at the meeting of the Council of the Royal Agricultural Society, and evinced the greatest interest in the discussion which there took place, on the general question of flax-cultivation, and the recent discovery by which flax could be made available for spinning, alone or in combination with cotton, wool, or silk, upon the existing machinery. In reply to the hon. member for Carlisle (Mr. Hodgson), who had referred, among other matters, to the condition of the hand-loom weavers in the town which he represented, Sir James Graham having referred to the effect which the diminished supply and increased price of cotton had had upon the prospects of that class in that particular locality, said—

> "But this is a question of the price of cotton, and strange as it may be, it opens out a ray of hope even to the landed interest. Whence does this ray come? Why, it comes from the quarter whence they least expected it:—
>
> ———" Via prima salutis,
> Quod minimè reris, Graiâ pandetur ab urbe."
>
> It is from the mills of Messrs. Bright and Co. (cheers and laughter). It is from Rochdale that this light of hope opens on the landed interest (cheers). Hopes are entertained—confident hopes—that by a new management of flax-stalk it may be used in large proportions with great advantage and diminution of cost in mixture with cotton wool, sheep's wool, and even with silk wool (hear, hear). And, Sir, for my part, I cannot conceive any dispensation of Providence more merciful, than that science and skill should succeed in overcoming this difficulty, whereby we should be rendered in a great degree independent of foreign supply, while a great stimulus would be given to our manufactures; and if, happily, this encouragement to the cultivation of flax here should succeed, I am very confident we shall hear no more of the distress of those hand-loom weavers, that the cultivation of land will be largely improved by the introduction of capital in growing this new plant, and that this plant will be of great service to the agriculturist, from its being peculiarly adapted to increase the fertility of the soil" (cheers).

The facilities with which the grower of flax will be enabled to avail himself of these new markets, constitute the second great feature in the present flax movement. The difficulty of disposing of his produce, unless previously prepared by steeping, as already shown, has hitherto formed a serious obstacle to the extension of flax culture. In order to remove the objections of the growers on this head, the system which exists in Belgium of purchasing the flax in the straw by factors, was a few years since introduced into Ireland, at the recommendation of the Royal Irish Flax Society; but in the last report of that society, it is stated, that there was "reason to believe that the system could not be made practically available in that country." Aware of the many difficulties which existed in the way of the grower preparing his flax for market, it being considered indispensable that the first stage in its preparation should involve the necessity of steeping; finding also that the plan of purchasing the flax in the straw by factors would not be practically available, it has been proposed, that persons possessed of exclusive rights, under a patented system of steeping the flax in hot water, and which, undoubtedly, possesses many advantages over the old modes of steeping, should in the particular districts secured to them, purchase the flax from the grower, and relieve him altogether from the trouble and risk of its preparation for the manufacturer.

The principle of "division of labour," upon which this new arrangement purports to be founded, is perfectly sound, and it is one which is everywhere recognised as the great agent in the race of competition. Let a man's undivided attention be devoted to any particular trade or department of industry, and the work will, undoubtedly, be much better performed than by the person only casually employed in the production or manufacture of the same description of article. To this general rule the preparation of flax for manufacturing purposes forms no exception.

This principle of a division of labour which may be invaluable where competition exists, may, however, become the means of the greatest oppression and injustice, when not subject to the check which a wholesome competition provides. It is the complete absence of this salutary check that renders the plan proposed by the Royal Flax Society open to objection and liable to the worst of abuses. A mere division of labour, without fair competition, may be compared, in its effects, only to a dead and stagnant pool, rather than an onward living stream which should be the type of a great branch of national industry. By the plan as at present proposed, the growers of flax in large districts of country have no means of disposing of their produce except to the party possessing a license under the patentee for their particular district. They are thus placed entirely at the mercy of an individual who, in the profit resulting from this division of labour will naturally be anxious to obtain the lion's share; and it is not in human nature successfully to resist the temptations which unlimited power confers. It appears, from statements made before the Royal Agricultural Society, and which were not impugned by the representatives of the Royal Flax Society present on the occasion, that this power has already been injuriously exercised to a considerable extent, and prices have been offered for crops of good and fair character, which, in many instances, would not repay the cost of cultivation.

The *Morning Chronicle*, alluding to this subject, a short time since, made the following remarks:—

> "Under a system which involves the supposed necessity of steeping the flax in one form or other, it is obvious, from the risk and trouble which must be incurred, that it is only by the general establishment of some such principle as this of 'division of labour,' that any very extended growth of flax can be reasonably anticipated. It is a matter, however, worthy of very grave consideration, how far some plan may be devised which will give a more equitable division of labour than that above indicated, with it some more equitable distribution of profits, and which will also enable the grower of flax to avail himself of the advantages which competition ought always to afford in any system of 'division of labour.'"

The remedy for this state of things is a perfectly simple one, and consists merely in placing at the disposal of the grower, the means of reducing the bulk of his flax crop without resorting to steeping, so as to admit of its easy and convenient transit *to the* best and most advantageous market. The grower of flax will not then be compelled to dispose of his produce upon the terms *which* may be offered by an individual, possessing the exclusive right of preparation under any system, but may avail himself of the facilities which the great extension of the railway system provides for sending his crop, reduced both in weight and bulk, to any market where better prices may be obtained. I am as deeply interested as any person in upholding the rights of inventors, and of persons holding licenses under them; but I protest I *would* infinitely rather prefer sacrificing my own interest in the matter, and throwing open my invention to the public, than consent *to* derive advantages obtained at the expense of a class of producers, for whose prosperity I have from my youth felt the deepest interest, and in whose pursuit and employments, many of the happiest years of my life have been passed.

That a reduction of the bulk, by a partial separation of the straw from the stem of the flax plant, may be effected without steeping, and by a very simple and inexpensive mechanical process, is a point which is now completely set at rest. All that is required, is simply to pass the stem between a pair of rollers, or break it by means of a common "breaker," after which the straw may be separated by any beating motion with the most perfect ease. The cost of a hand-machine for this purpose would be about ten pounds, and may be used without payment for license or royalty, by any grower of flax in the United Kingdom. The flax so prepared, according to the Report of the Royal Flax Society, is peculiarly well adapted to the manufacture of sail-cloths, standing and running rigging, ropes, canvass, nets, bags, and other coarse articles for manufacture. It it is also excellently adapted for the after-treatment required in order to prepare it for spinning, alone or combined with cotton, silk, or wool, upon the ordinary machinery. In addition to these large and important markets, it is also equally available for the great and growing branch of the linen manufactures, for which it is considered necessary that the flax should be steeped, either in cold or hot water, previous to being spun. Mr. M'Adam, the Secretary of the Royal Flax Society, when shown at the meeting of the Royal Agricultural Society some samples of the flax thus partially cleaned without steeping, expressed his belief that considerable advantages would be derived from such a complete or partial separation of the straw or woody part of the plant, previous to steeping.

The two great advantages which would be gained from the treatment of the flax in this state, as compared with the present mode of steeping it while in the straw, would be the greater quantity which it would be possible to put into the steep-vats, and a considerable reduction of the period at present required for steeping. It is estimated that by the time when this year's flax crop reaches maturity in Ireland, there will be upwards of twenty of Schenck's steeping concerns ready for work, capable of preparing the produce of 6,000 acres, or about one-tenth of the average breadth of flax at present cultivated in that country. It is evident that if so much of the straw were taken from the plant, as would reduce its bulk to one-fourth the accommodation at present provided would be sufficient for steeping the produce of nearly 20,000, instead of 6,000 acres. And if the period required to steep the flax were reduced in a similar proportion, in consequence of the greater ease with which the action of the water could be brought to bear upon the fibres, the vats at present erected would be more than sufficient for the preparation of the whole of the flax at present grown in the United Kingdom, and the cost of the plant and buildings required for future steeping concerns, would be greatly diminished.

In addition to the advantages which the grower would derive from this partial removal of the straw and diminution of the bulk of his crop, by being enabled to avail himself of the bset market for his produce, he would also be enabled to return to the soil, in the shape of manure, a large portion of the crop which would otherwise be lost to it. Thus, for instance, a grower having four tons of flax in the straw, would by the separation of the straw by a purely mechanical process, obtain from two to three tons of a material of equal if not of greater value than wheat straw, which would be available for mixing with linseed or other articles of cattle-food, and thus increase the quantity and value of the manure. He would also have the means of profitably providing more constant and steady employment for his labourers, as such preparation of the flax might be carried on at times when the state of the weather or other circumstances rendered field labour impracticable.

DIVISION OF LABOUR.

But although the principle of a division of labour may be absolutely necessary, in order to attain perfection in the preparation of flax, or manufacture of any article, it is by no means necessary that the different portions of the labour should be carried on by parties each having conflicting and independent interests to serve. That division of labour which allots certain duties to the ploughman, the sower and the reaper, does not necessarily involve the idea of conflicting interests, such as that which has been pointed out in the relation in which the grower stands to the steeper or preparer of flax. There is no reason whatever, now that the mode of treatment required in the preparation of flax has been made one of comparative ease and perfect certainty; and if an adequate profit can be derived from the operation, why, the grower should not carry out upon his own farm, one step farther the great principle of "division of labour," which he has employed in the production of his crop, in order to bring it into a state ready for use by the manufacturer. The objections which existed to such a course under the old modes of preparing and steeping flax, are now completely removed. Great improvements are constantly taking place in the mode of carrying on farming operations; agriculture is rapidly becoming a science; and the scientific agriculturist of the present day cheerfully avails himself of every assistance which the discoveries of chemistry or the development of mechanical skill can afford. The tall chimneys which already begin to dot the face of the rural districts, show that the steam engine is already recognised as an agent, and its mighty power made to subserve the interests and do the bidding of its agricultural masters.

Why should not the same principle of "division of labour" which has allotted his duties to the "engine man," upon the farm, be extended so as to include the "preparer of the flax?" The same power which propels the varied thrashing and cutting machines, could be applied to machinery of an equally simple character for the preparation of the flax. To object to the agriculturist of the present day engaging in these operations, because to his other knowledge he has not added that of a chemist, would be as impertinent as to contend that he ought not to be allowed the use of steam machinery, because he has not the knowledge and experience of an engineer. The amount of chemical knowledge required in the preparation of flax, according to the new modes is, however, really so small that any agricultural labourer of average understanding, may acquire it in less than twenty-four hours. The great want of the present age is the means of bringing more closely together the great agricultural and manufacturing interests of the country. The estrangement of feeling between these two great classes, has already subsisted too long, and been productive of too many evils to render its further continuance desirable; and there are no means by which this feeling can be more effectually overcome, than by bringing them into closer alliance with each other in the character of producer and consumer.

There are many agriculturists, however, not possessed of steam machinery and who could not grow such a quantity of flax as would make it profitable for them individually to erect the necessary buildings and apparatus required in the complete preparation of their produce, for the cotton or linen manufacturer. In such cases, the principle of mutual co-operation at once suggests the means by which the object might be obtained. The flax growers in certain districts might unite together, for the purpose of providing the necessary plant and buildings, and thus secure to themselves that large amount of profit to be derived from the complete preparation of the flax fibre. They might in one and the same building, provide the means of crushing the oil from their surplus linseed, and prepare their flax for the cotton, linen, wool, or silk manufacturer, as best suited their purpose; for the same apparatus which would be required for the preparation of the long flax for linen, would be equally applicable for the production of the short fibre, suited to the other branches of manufacture. According to the statements which have been put forward by the Royal Flax Society, of the produce and cost of preparing the flax under Schenck's system, it would appear that a gross profit could be obtained from one acre of flax of about 23*l*., or something like 200 per cent. The sanguine expectations formed on the subject have not been, however, completely realised in practice, and, instead of obtaining one-fifth of fibre, the average does not exceed one-eighth. But even with this diminished yield, however, the preparation of flax upon this system may be carried on " with a fair profit to those who may embark in it as a business undertaking."

The profits to be obtained from the preparation of flax-cotton—which can be made of any required staple—of flax-silk or flax-wool suited to existing machinery, are such as to offer the greatest inducements for persons to embark upon the undertaking, as shewn in the following estimate of the cost of production and value of the article:—

6 tons of flax in the straw at £4 per ton, or,			
2 tons of flax partially cleaned by the grower, at say £12 per ton	£24	0	0
Ingredients employed	5	0	0
Cost of labour	6	0	0
	£35	0	0

Being about fourpence per pound.

This estimate cannot, by any possibility, be exceeded; and is considerably higher than the results of actual experiments have shown to be the case. The produce of six tons is stated to be required, whereas five tons of a fair quality would be amply sufficient. The cost is also stated at £4 per ton, while the average price at present paid for flax in the straw does not exceed £3 per ton. The cost of ingredients and labour is set down as the same required under Schenck's process, but which exceeds the actual cost, especially in Ireland. The value of the flax so prepared will be regulated, to some extent, by the price which its rival, cotton, bears in the market: but there is no doubt but that it will range at prices equal to that of "fair bowed," at present about eight pence per pound, the *Manchester Examiner and Times* states that the flax so prepared is "perfectly white and clean, superior indeed, as respects colour, to any cotton we have seen. . . In addition to this it will be seen there will be a great saving in loss or waste, as compared with cotton; because when the flax enters the blower it will have been already thoroughly cleaned, and cannot lose anything in the process of working beyond some of the finest and lightest fibres." Taking it however as worth only six-pence per pound, the value of one ton will be £56, while its greatest cost as shown by the above estimate will not exceed £35, leaving a gross profit of £21 per ton upon its preparation. The same estimate would apply to the preparation of flax for spinning upon wool and silk machinery.

The report of the proceedings of the Agricultural Society states the advantages connected with this mode of preparing flax to be the following:—

"That by the new process flax is rendered capable of being spun, either in whole or in part, on any existing spinning machinery.

"That the fibre to be mixed with cotton or spun alone on cotton machinery is so completely assimilated in its character to that of cotton, that it is capable of receiving the same rich opaque colour that characterises all dyed cotton; and, consequently, any cloth made from flax-cotton yarn can be readily printed, dyed, or bleached, by the ordinary cotton processes.

"That flax-fibre can be always produced with profit to the British grower at a less price than cotton can be imported into this country with profit to the foreign producer.

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* See Appendix. page 44.

"That, as a consequence of this advantage, the manufacturers of this country will be less dependent on the fluctuations of the cotton crop for a supply of the raw material, and a more regular employment will be given to the manufacturing population, and the present amount of local rates be greatly diminished thereby.

"That the British grower will of necessity derive great benefit from the supply of the wide demand thus opened to him.

"That with respect to the advantages of being able to spin flax in combination with wool on the existing woollen machinery, the first is, that the flax prepared by M. Claussen is capable of being 'scribbled,' 'spun,' 'woven,' and 'milled,' in all respects as if it were entirely wool; having an advantage in this respect over cotton, which has not the slightest milling properties; on the contrary the flax fibre is capable of being even made into common felt hats with or without an admixture of wool. To such an extent has the milling property of flax been proved, that the sample of cloth exhibited had been woven to 54 inches wide, and milled up to 28 inches wide.

"That the flax-fibre will not, under any circumstances, when prepared for spinning with wool, cost more than from 6*d*. to 8*d*. per lb., while the wool with which it may be mixed will cost from 2*s*. to 4*s*. per lb.; consequently reducing the price of cloth produced from this mixture 25 or 30 per cent. below the present prices of cloth made wholly from wool, and being of equal, if not greater durability.

"That short-wool refuse, which cannot by itself be spun into a thread may, by being mixed with this thread, be readily spun and manufactured into serviceable cloths.

"That there is a probability of a further demand being opened up for this fibre in the flannel and woollen trade.

"That by this process flax may be also so prepared as to be spun in any certain proportions with silk upon the existing silk machinery; that when so spun, it is capable of receiving considerable brilliancy of tint. That the fibre may be prepared for thus spinning at a uniform price of from 6*d*. to 8*d*. per lb. That as it may be spun in any proportion with silk, it is evident that the price of the yarns must be reduced according to the relative proportions of the materials employed, thus extending the markets, and giving increased employment to the operatives.

"That, by M. Claussen's plan of bleaching, any useless flax can be converted into a first-rate article for the paper-maker, at a less price than the paper-maker is now paying for white rags; and suitable for the manufacture of first-class papers."

It may, probably, be considered presumptuous in me to offer an opinion on the value of an invention with which I am personally connected, but it apppears to me impossible to estimate too highly the beneficial effects which the opening up of new markets, so extensive as those of the manufactures of Great Britain, will have upon the development of the vast industrial resources of Ireland. It would tend to arrest that fearful tide of emigration which is now sweeping away the bone and sinew of the country, and adding power and strength to a haughty rival, upon whom England is dependent for its prosperity and even its manufacturing existence. By giving the means of profitable employment to the people, the crushing burden of local rates would be diminished, land would realize its fair value, and we should hear less of the "confiscation" of the property of the country through the machinery of the Encumbered Estates' Court. A firm bond of union would be formed between the two countries, while agricultural science and mechanical skill, working hand in hand, would fix the prosperity of the country upon a basis firm as the sea-girt isle itself. The slender stalks of the flax plant waving over its broad and fertile lands, would render our agriculturists and manufacturers independent of foreign countries, and its beautiful and delicate blue flower would henceforth be regarded as the emblem of a happy united and prosperous people.

PREPARATION OF FLAX COTTON.

The principle of the invention by which flax is adapted for spinning upon cotton, wool, and silk, independent of flax machinery, consists in destroying the cylindrical or tubular character of the fibre, by means of carbonic or other gas, the action of which splits the tubes into a number of ribbon-like filaments, solid in character and of a gravity less than cotton, the upper and under surfaces of which are segments of circles, and the sides of which are ragged and serrated. In order to explain the nature of the process by which this change is effected, it is necessary first to explain the structure of the flax plant. The stem of the plant consists of three parts; the shove or wood, the pure fibre, and the gum resin or glutinous matter which causes the fibres to adhere together. In the preparation of the plant for any purpose of fine manufacture, it is necessary first to separate from the pure fibre both the woody part and the glutinous substance. The former of these may be removed by mechanical means, previously referred to, almost as simple as those employed in the threshing of wheat. In order, however, to remove the glutinous substance from the fibre, recourse must be had either to the fermentation produced in the steeping process or to some other chemical agent. The present system of steeping in water, whether cold or hot, is, however, ineffectual for the complete removal of the glutinous substances adhering to the fibres, a large per centage of which is insoluble in water. The first process, therefore, which it is necessary to adopt in the preparation of flax cotton, is to obtain a perfect and complete disintegration of the fibres from each other, by the entire removal of the substance which binds them together.

This is effected by boiling the flax for about three hours, either in the state in which it comes from the field, or in a partially cleaned condition, in water containing about one half per cent of caustic soda. After undergoing this process, the flax is placed in water, slightly acidulated with sulphuric acid; the proportions of acid used being 1 to 500 of water. Any objections urged against the employment of such substances, even in the small proportions above stated, are at once met by the fact, that the soda present in the straw, after the first process, neutralizes the whole of the acid, and forms a neutral salt, known as sulphate of soda. This process producing, as it does, a complete separation of the integral fibres from each other is equally adapted for the preparation of long fibre for the linen, or of short fibre for the other branches of textile manufacture. When required to be prepared for linen, all that is necessary after the above process, is to dry and scutch it in the ordinary modes. The advantages which this mode of preparation possesses over any other mode in use, are stated in the official report of the proceedings at the Royal Agricultural Society to be the following:—

1. "That the preparation of long fibre for scutching is effected in less than one day, and is always uniform in strength, and entirely free from colour, much facilitating the after-process of bleaching, either in yarns or in cloth.

2. "That it can be also bleached in the straw at very little additional expense of time or money.

3. "That the former tedious and uncertain modes of steeping are superseded by one perfectly certain with ordinary care.

4. "That in consequence of a more complete severance of the fibres from each other, and also from the bark and boon, the process of scutching is effected with half the labour usually employed."

Complete, however, as may be the separation produced by this mode of treatment, the fibres, from their tubular and cylindrical character, are still adapted only for the linen or present flax manufactures, as their comparatively harsh and elastic character unfits them for spinning on the ordinary cotton or woollen machinery. At this stage, therefore, it is that the most important part of the invention is brought into operation. The flax, either before or after undergoing the processes required for the severance of the fibres, is cut by a suitable machine into the required lengths, and saturated in a solution of sesqui-carbonate of soda (common soda) a sufficient length of time to allow of the liquid entering into and permeating by capillary attraction every part of the small tubes. When sufficiently saturated, the fibres are taken out, immersed in a solution of dilute sulphuric acid of the strength of about one part to two hundred parts of water. The action of the acid on the soda contained in the tube, liberates the carbonic gas which it contains; the expansive power of which causes the fibres to split, and produces the result above described. The fibre is then bleached, and after having been dried, and carded in the same manner as cotton, is fit for being spun upon the ordinary cotton or woollen machinery; the material at this stage possessing the qualities described in the *Manchester Examiner* and *Times*, and to which allusion has already been made. The practicability of transforming flax into this cotton-like substance, was demonstrated at the last meeting of the Royal Agricultural Society, by Professor Way, the consulting chemist to the Society, and the Secretary, Mr. Hudson, referring, in his report of the proceedings, to the experiment which then took place, says:—

> "Although we have long been practically familiar with the expensive effects of aeriform fluids suddenly disengaged chemically from an apparently solid and inert substance like gunpowder, either in fire-arms or the blasting of rocks, and with their elastic recoil when released from the pressure of condensation, as in the air-gun or the liquid gases of Dr. Faraday, we were not prepared for so beautiful an instance of the application of this principle as the one Chevalier Claussen has given us in the splitting of vegetable fibre, by conveying into its interstices the carbonic acid gas concealed in condensation and chemical alliance with soda, and then setting it free by the addition of acid, which breaks off that alliance by its own superior elective affinity for the alkali. Means shown in their result to be so powerful, and in their operation so gentle yet decisive, gave to the simple experiment, made in the presence of the council by Professor Way, more the air of a new instance of natural magic, than the sober reality of an ordinary operation of natural laws, of which the application only was novel; and its effect on the meeting was accordingly both singular and striking, occasioning evident marks of their agreeable surprise and admiration at the result obtained. The flax fibre soaked in the solution of sub-carbonate of soda was no sooner immersed in the vessel containing the acidulated water, than its character became at once changed, from that of a damp rigid aggregation of flax to a light expansive mass of cottony texture, increasing in size like leavening dough, or an expanding sponge. The change was no less striking when this converted mass in its turn was placed in the next vessel, which contained the hypo-chlorite of magnesia and became at once bleached, attaining then the colour as it had just before received the texture, of cotton."

Some objections have been taken to this process by persons who appear to regard flax as a material which ought to be solely applied to the manufacture of linen or cambric, and think that any preparation of it which does not best adapt it to the manufacture of these fabrics, is to be discountenanced. The attempt to substitute flax for cotton—a home-grown for a foreign article—has even been stigmatized as a *reductio ad absurdam*, by an extensive flax grower and manufacturer of Belgium, in a letter published in the *Morning Chronicle*, and who also expressed his opinion, that any invention by which cotton could be transformed into flax, would be justly entitled to the merit of a great discovery.

The objection is founded upon the supposition, that the fibre is greatly reduced in strength by the process resorted to. When compared with fibre of an equal degree of fineness, prepared upon the most improved method of steeping, the results have been decidedly in favour of the mode just described. When the fibres, however, are split, it is perfectly natural to suppose, inasmuch as "a part is less than the whole," that the filaments into which they are split, are not of the same strength as the fibres of which they originally formed a part. The strength of the fibre is reduced in proportion to the division of the parts which takes place, and is not impaired by the action of any of the chemical ingredients employed. The strength of the fibre, when brought into a fit state for the cotton-spinner, is not, therefore, to be compared with that required for the stronger and more durable linen yarns, but with that for which it is intended to be used as a substitute or auxiliary; viz. cotton or wool, with which it will bear the closest comparison. It matters, therefore, little by what name the fabric produced from the prepared flax-fibre or flax-cotton be called, provided it open up a demand for flax at remunerative prices to the grower. That the material so prepared, is capable of being spun on cotton and wool machinery, is a fact, with respect to which any person may satisfy himself, by visiting the mill of Messrs. Quitzow, Schlessinger and Co., at Apperley-bridge, near Bradford, and at Mr. Dargan's mills at Kildinan, near Cork, where the process is now being carried on upon an extensive scale. The objection with respect to the cost of preparation has been disposed of in the preceding chapter.

The *Manchester Examiner and Times*, in its account of the experiment lately carried on at the mill of Messrs. Bright Brothers, of Rochdale, stated some weeks since, that—

> "The rovings thus produced have been made both into mule and throstle yarn, the former being about 30*s*, weft. and the latter about 18*s*. twist. We have seen samples of the weft and twist thus spun, and although it might not take a first place in the market, it is such as to afford satisfactory evidence that yarn and cloth of fair quality may be, and probably soon will be, made of equal parts of flax and cotton."

Samples of the cloth referred to above, which were woven at the mill of Messrs. Bright Brothers, of Rochdale, were exhibited at the meeting of the Royal Agricultural Society, on the 26th of Feb., as well as of the following articles as contained in the official report of the proceedings:—

"Sample of flax-straw, prepared according to the new process, adapted for linen manufactures.

"Sample of long fibre scutched from the above.

"Samples of pure flax-fibre, or "British cotton," adapted for spinning on cotton machinery.

"Sample of yarn spun on cotton machinery, some from all above flax-fibre, others mixed in various proportions with American cotton, those mixtures being termed by the inventor flax-cotton.

"Samples of flax-fibre prepared for mixing with wool.

"Samples of yarn produced on ordinary woollen machinery, composed of wool and flax in various proportions, termed by the inventor flax-wool.

"Samples of flannel woven from the above.

"Samples of fine cloth woven from yarn composed of flax and fine wool in various proportions, and dyed.

"Flax-fibre prepared for mixing with silk, and dyed of various colours.

"Flax-fibre mixed with spun silk, and termed by the inventor flax-silk.

"A sample of yarn produced from the above.

"Samples of flax-cotton yarn dyed of various colours.

"Samples of cloth woven from flax-cotton yarn and wool, dyed."

In order to afford every possible facility to the growers of flax, either in their individual capacity or by means of associations among themselves, for the preparation of flax cotton, the inventor instead of requiring a considerable sum to be paid down for the grant of licenses to use his invention, is prepared to grant a license for twelve months, for a moderate sum, leaving it optional with the party to renew the license at the expiration of that period upon the same terms, and will undertake to receive for royalty a certain quantity of the prepared flax cotton at the rate of 6*d.* per pound. The necessary instructions will also be *practically* given in all cases where required, or properly qualified persons will be provided for superintending the processes to be adopted. With respect to persons disposed to grow flax, but who would not be induced to avail themselves of the advantages which would result from the complete preparation of the fibre, and who, from their distance from a market could not profitably dispose of their produce in the straw, the inventor will undertake to supply at cost price,—about 10*l.*—without payment for license, royalty, or other charge, suitable machines for enabling the grower to reduce the bulk of his crop, and to diminish thereby the cost of transit to suitable markets.

Should the grower of flax not be disposed, however, to undertake the complete preparation of his produce for the manufacturer, and the existence of markets in his immediate neighbourhood for the flax in the straw, should render it unnecessary for him to reduce its bulk, the sale of the flax in that state would be attended with profit greater than can be obtained from any ordinary crops, as shewn by the following statement, made by Mr. Druce, of Ensham, in Oxfordshire, before the Royal Agricultural Society. His property lay on the Oxford-clay formation, and the piece of ground on which his flax was grown consisted of a deep red loam, and in extent was 5a. 2r 36p. His profits were as follows:—

1.—EXPENSES OF CULTIVATION.

One ploughing, at 10s. per acre	£2	17	3
Sowing and harrowing, at 1*s*. 6*d*. per acre	0	8	7
Weeding, at 2*s*, per acre	0	11	5
Flax-seed, 13½ bushels, at 9*s*	6	1	6
Rent of land, at 48*s*, per acre	13	14	9
Taxes, at 6*s*. per acre	1	14	4
Pulling flax, at 14*s*. per acre	4	0	1
Carting and stacking, at 4*s*. per acre	1	2	10
Thrashing	5	7	1
Winnowing	0	12	6
Total Expenses	£36	10	4

2.—SALE OF PRODUCE.

Sale of flax seed, 20¼ bushels per acre—116¼ bushels, at 8*s*.	£46	10	0
Sale of flax straw, 12 tons 2 cwt. 2 qrs., at 3*l*. per ton	36	7	6
Sale of chaff, at 5*s*. per acre	1	8	7
Total Receipts	£84	6	1

Leaving a net profit of 47*l*. 15*s*, 9*d*. on the 5A. 2R. 36P., being equal to 8*l*. 6*s*. 2*d*. per acre of land employed in this trial of flax cultivation.

Mr. Druce expressed his opinion, at all events, that it would be found a good thing for every farmer to grow some flax on his farm, if only for the purpose of working up his inferior hay, with a paste of beans and flax seed, as food for his cattle.

ARGUMENTS IN FAVOUR OF AN EXTENDED FLAX CULTURE.

In addition to the advantages already referred to, from an extension of flax-culture in the United Kingdom, many additional advantages and arguments in its favour are to be found in the official report of the proceedings at the meeting of the council of the Royal Agricultural Society, on the 13th of February, of which the following is an extract:—

ROYAL AGRICULTURAL SOCIETY OF ENGLAND—CULTIVATION OF FLAX.

Flax Cotton.—The Chairman informed the council, that in consequence of the great interest, in a national point of view, attached to the recent discoveries of M. Claussen in rendering flax subservient to the purposes of cotton, and the importance to the farmers of this country of every fact affecting the cultivation of flax, he had requested that gentleman to favour them with his attendance on that occasion, in order that he might explain to those members present his views on the subject of the increased demand that might possibly arise for the article of flax by the British manufacturer, in consequence of the facilities offered by his new process for adapting it to purposes of a more general character, and the greater attention the flax crop would deserve on the part of the agricultural community, reserving to a further meeting the opportunity of detailing to the council the chemical and mechanical processes by which flax was converted into a substance possessing for manufacturing purposes all the properties of foreign cotton. The Chairman hoped that this discovery, if found to be equal to the expectation formed of it, might, perhaps, constitute a new bond of union between the farmer and the manufacturer of this country. He need scarçely add the caution, that the council were not responsible for the opinions which might be laid before them on this subject, as their own rule, like that of other similar bodies, guarded them from any danger of misapprehension on that point. The statement of M. Claussen would rest on its own merits or otherwise, and they were obliged to that gentleman for favouring them with his views on the subject, at their first weekly council of the session, and previously to the final enrolment of his specifications.

Mr. M'Dermott on behalf of the Chevalier Claussen, then read the following paper:—

REASONS IN FAVOUR OF AN EXTENDED CULTIVATION OF FLAX AND HEMP IN THE UNITED KINGDOM.

My object, gentlemen, in reading the present paper, at the request of your esteemed chairman, is to submit to you, and through you to the great agricultural body of England, a few facts bearing on the importance and advantage which, in a national and individual point of view, would result from a more extensive cultivation of fibrous plants in this country. In venturing humbly to submit these facts and opinions to so important and influential a body of gentlemen as those who compose the Council of the Royal Agricultural Society, I am far from wishing it to be understood either that I conceive them to be ignorant of many of the facts which I shall have occasion to adduce, or that the subject of flax culture is one to which they have not already paid some considerable attention. On the contrary, many of the valuable reports of your society, and the prizes given for essays on the subject, prove that it has at various times engrossed your consideration, and formed the theme of serious deliberation at your councils. Markets comparatively undeveloped; ignorance of the true character and structure of the plant; prevalence of modes of cultivation and preparation of the fibre, wasteful and injurious in themselves, and attended with an enormous amount of risk and trouble to the grower, have hitherto each had their weight in inducing your society to withhold its valuable recommendation in favour of an extension of flax culture.

The progress of science, and the skill and enterprise displayed by many of the agriculturists of England and Ireland, have, however, now placed the matter upon a perfectly different footing, and upon one which I venture to submit should induce the Royal Agricultural Society, in the most strenuous manner, to urge upon the farmers of the United Kingdom the propriety of immediately devoting some portion of their land to the cultivation of flax.

CLIMATE AND SOIL OF ENGLAND SUITED TO ITS GROWTH.—That flax can be produced in this country is a point upon which I apprehend little doubt now exists; and it is unnecessary for me, especially before such a body as that which I have now the honour of addressing, to argue such a question. Suffice it, therefore, upon this point, to say, that in many respects our climate is better adapted for its growth than even Belgium, inasmuch as we are not subject to those severe droughts which, occurring in the spring, in that country, frequently inflict very serious damage upon the young crop. Flax is grown to some extent in almost every part of the United Kingdom; it has been grown with success upon an Irish bog, and in the fen districts of England, on the summit of the Wicklow mountains, and upon the Beacon-hill of Norfolk, in the midland counties of England, and the western shores of Galway and Mayo, upon rich and poor, clayey, gravelly, alluvial, and every variety of soil.

IMPORTANCE ATTACHED TO GROWTH OF FLAX BY GOVERNMENTS.—This suitability of our climate and soil to the production of flax, and the importance which in earlier times was attached to it, is sufficiently evidenced by the numerous legislative measures which at various times, from the reign of Henry VIII. to that of George III., have been passed in order to promote and encourage its growth. The "Transactions of the Board of Agriculture" for 1742, contain a letter, written by Robert Somerville, Esq., of the East Lothians, in which the writer regrets, nowithstanding these encouragements and the bounties offered by the liberality of the Government, that the cultivation of flax should then have been so extremely limited, and the management in every stage, both of its culture and manufacture, so very defective

"This," says he, "is the more to be regretted, as there can be little doubt that immense quantities might be raised in Britain with little labour, and that, too, upon soils where hardly anything else will grow. The accomplishment of an object so truly desirable as that of the extended cultivation of flax would be attended with the most salutary effects, by affording employment for an increased population, and materially lessening our dependence upon foreign countries."

But if, upwards of a century since, great importance was attached to this subject, on the ground of increased population and dependence on foreign countries, of how much greater importance and advantage ought it not to be considered, at a time when our population is more than doubled, and our consumption of cattle-food, formed from flax seed, and of raw material for our manufactures, have increased to an extent which, a century since, would have been considered fabulous and incredible; and at a time, too, when our railways, and improved means of transit, give such increased facilities to the grower for the disposal of his produce.

MARKETS.—In urging upon the agriculturalists of England the propriety of an extended cultivation of flax, I am anxious, first, to show them the enormous extent of the existing markets for their produce, which is almost exclusively engrossed by the foreign producer, and the vast demand which is now opening up in consequence of the recent discovery by which flax may be employed in our silk, woollen, and cotton manufactures; and which, if not speedily secured by our home producer, must, in like manner, be supplied by the foreign grower. The markets which at present exist for flax are twofold in their character—agricultural and manufacturing. Under the former are comprised those large quantities of oil-cake, and of flax-seed for growing and crushing purposes, which are annually consumed in this country.

OIL-CAKE.—Upwards of 70,000 tons of oil-cake are annually imported, the value of which exceeds £500,000; the whole of which might be produced by our agriculturalists with the most perfect ease, and with profit and advantage to themselves. In connection with our supply of foreign oil-cake, it is worthy of remark, that by far the larger proportions are sent from those countries which are the largest exporters of cattle to this country. By the almost total neglect of the cultivation of flax, our farmers are thus placed in the anomalous position of dependence upon those countries for the supply of food for their cattle which compete with them in our markets, and in several instances are actually compelled, in addition to the price set upon the cake, to pay a considerable duty imposed by the Governments of the exporting countries.

FLAX-SEED FOR CRUSHING.—From Russia we import annually half a million of quarters of flax-seed, the value of which is upwards of a million sterling. Our total imports of flax-seed for sowing and crushing, from all countries, in round numbers, is about 650,000 quarters, the value of which, at the low price of 7s. per bushel, is £1,820,000. There is no reason whatever why this large sum might not be annually saved to the pockets of our agriculturalists, nor why the makers of linseed oil should not be supplied exclusively with home-grown seed for the purposes of their manufacture. The cultivation of flax at home, if only for the seed, would render our oil-pressers independent for their supply upon foreign countries, and would give to our agriculturalists a return of upwards of £2,000,000 annually. It would also make an article more valuable for cattle-food than the oil-cake purchased from foreign countries, and which consists of the mere refuse and husks which remain after the expression of the oleaginous properties from the seed; or, if it should be preferred by some still to use cake, the seed could be sent to the "oil-presser," the refuse returned, and the grower might fatten his cattle upon cake produced from home-grown instead of from foreign linseed.

Sowing Seed.—With an increased cultivation of flax at home, we should also be spared the dependence upon foreign countries for our supply of seed for sowing purposes, and which we now import to the value of some £200,000 per annum; for it is absurd to suppose that flax can only be grown in this country from foreign seed, the reason of this opinion being traceable to the prevalent mode of pulling the flax before fully ripe.

Manufacturers.—Passing on, however, from the agricultural demand which exists for the crop in the shape of seed, I will now call your attention to the existing market and the sources of supply for the fibre of the plant required in our manufactures. It cannot fail to be a matter of deep regret to every well-wisher of his country, that in the two main branches of our textile manufactures, we are so completely dependent for the supply of the raw material upon foreign countries. Our cotton manufactures absorb daily one thousand tons of cotton wool, the produce of foreign countries alone. For our supply of cotton, we must, no doubt, still continue to be dependent upon foreign countries, inasmuch as the material cannot be produced at home; but there is every reason to believe, that by the adaption of flax to cotton machinery, this extent of dependence will in future be considerably less than it has hitherto been, provided our agriculturists will but come forward in earnest, and endeavour to supply the new demand for their produce thus created. Our linen and other manufactures in which flax is employed are all but completely dependent upon foreign countries for their supply, and of the 100,000 tons now annually consumed, not more than one-fourth is produced in this country. The total value of the flax fibre imported for manufacturing into linen, sail cloths, tarpaulings, rick covers, sacking, and other materials, exceeds £5,000,000 annually; and there is no doubt, judging from the rapid progress of our linen manufactures, that if the supply of the raw material could be more readily obtained at home, the consumption would be increased to a still greater extent. The progress of the linen trade, in consequence of the great improvements which have been made in machinery, has within the last twenty years been almost unparalleled. The exports of linen have increased since that time from 50,000,000 to 105,000,000 of yards, and its declared value from £1,700,000 to upwards of £3,000,000. No attempt whatever has been made on the part of our agriculturists to meet this enormous and rapid increase in the demand for the raw material; and as a consequence, the foreign producer has been reaping a golden harvest from the monopoly which he has posessed. The imports of foreign flax have increased from 936,000 cwts. in 1831 to 1,800,300 cwts. in 1842. The value of the increased imports being not less than two millions and a half, nearly the whole of which is paid for by money sent out of the country.

HEMP.—We also import large quantities of hemp, which might, like flax, be easily and profitably grown at home. The value of the hemp annually imported is about £1,500,000, We have thus a demand existing for flax and hemp, and for the supply of which we are dependent upon foreign countries as shown in round numbers, by the following figures:—

Flax fibre	£5,000,000
Seed for crushing	1,800,000
Seed for sowing	200,000
Oil cake	600,000
Hemp	1,500,000
	£9,100,000

NEW MARKETS.—Hitherto I have spoken only of the existing markets. I am now anxious to call your attention to that great demand which will be opened up by the discovery of a mode of adapting flax to cotton and woollen machinery. The substitution of flax for cotton is now no longer a matter of doubt. Recent experiments at Rochdale and Bradford have completely set that question at rest. Important as may be the considerations connected at present with the linen manufactures, and cogent as may be the arguments deduced from them, in order to induce you to obtain possession of the ground now occupied by the foreign producer, infinitely more important, and far more forcible are those which may be drawn from the prospective demand now springing up in our cotton manufactures. The consumption of the raw material must of necessity be governed by the machinery which exists for its manufacture, and the spindles of Belfast, of Dundee, and of Leeds, are already supplied with the produce of foreign countries. Not so, however, with respect to flax and its adaptation to the cotton manufactures. Millions of cotton spindles are ready at once to take to the new material and spin it for you, without the slightest alteration being required in their arrangement. A thousand tons of cotton daily, or 770,000,000 of lbs. annually are consumed in our cotton manufactures, and the result of recent experiments has been such as to show that flax may be substituted for one-half at least of this amount. In order, therefore, to supply the new demand for a new material thus created, the produce of 2000 acres will be required for each day, and the whole of the flax grown in the United Kingdom does not amount to more than one-seventh of the supply required for Manchester alone. It is a duty imperative upon the agriculturists of the country to endeavour to meet this enormous demand, and not to allow it to pass into the hands of foreign countries, which will inevitably be the case if they do not immediately exert themselves in this respect.

FLAX WOOL.—But not Manchester alone, but the woollen districts of England await with anxiety an increased supply of flax which shall be available for the purpose of spinning, in combination with wool, upon the existing wool machinery. I will not trouble you with statistics upon the subject of our woollen manufactures. The population of Leeds, Bradford, and other towns in the woollen districts, are kept in a state of prosperity by the employment which it affords; and the introduction of flax into that particular branch of our manufactures would have the effect of reducing the price of the material by at least 25 per cent, and of giving an increased amount of employment in those districts. One firm in Bradford has already taken steps to carry on the manufacture, and will probably require the produce of 5,000 acres in the ensuing year.

DEFICIENT SUPPLY OF COTTON.—In connection with the supply of the markets already referred to, a further argument is to be found in the fact of the present diminished supply of the raw material from foreign countries. "There is," says Mr. Porter in his remarks on the statistics of the cotton trade, in a paper read before the British Association last year, "a growing opinion that now, and for some years past, we have reached the maximum supply of cotton from the United States —a fact which, should it prove to be correct, makes it a matter of absolute necessity, either to seek for further supplies of the article from other sources, or to find some efficient substitute that shall provide the means of employment for our continually growing numbers." So great has been the deficiency of cotton in the United States during the past year, that the prices have risen cent. per cent. as compared with those of 1849, and our manufacturers are straining every nerve to endeavour to obtain an additional supply of cotton, and to reduce their dependence upon the United States for the supply of their staple article. The Manchester Chamber of Commerce, feeling the importance of the subject, have, at considerable expense, sent a gentleman to India for the purpose of obtaining information as to the probable extent to which they might depend upon that country for an increased supply of cotton. But to realise this much-desired benefit, there must be introduced into India a totally new system of managing the crop, and new and convenient modes of transit for bringing the produce of the interior down to the coast for shipment. Those acquainted with the habits and prejudices of the people of that country need hardly to be told with what difficulty such a change would be brought about, and how many years must elapse before the establishment of railways, or the formation of roads for the conveyance of the material produced under such an altered system. So far, then, as the arguments for an extended growth of flax in this country, founded upon the present position of our cotton manufactures are concerned, our agriculturists have to consider the diminished supply and increased price of cotton; the difficulty of obtaining the requisite supplies from other countries, and above all, the fact that flax can be advantageously employed as a substitute in those manufactures in which cotton is required.

DEFICIENCY OF FLAX.—If again we turn to the position of our linen manufactures, it will be found that there exists in that branch also a most extraordinary deficiency in the supply of the raw material. In Ireland the cultivation of flax has fallen off during the past year, as compared with 1845, by nearly 60,000 acres. In Russia, from whence we derive our largest supplies, there has been a decrease in the amount of exports of flax of nearly 150,000 "poods," or about 20 per cent.; and I find in *The Morning Chronicle*, which has devoted much attention to the subject of an extension of the growth of flax, a circular of one of the largest houses in St. Petersburg, in which the following statement occurs:—

"We are to have a small supply of flax next season, not above one-half of that which we had two years ago, and such high prices are consequently paying in the interior, that the dealers will not be able to lay it down here, to cost less aboard, than it is now selling for on your side; so that we are not likely to have anything doing on contract for a long time, if at all this winter, unless the relative state of the two markets experience mutual alteration by an improvement on your side."

In Belgium, where the finest qualities of flax are produced, the cultivation of flax is considerably less than on the average of former years.

It is under these circumstances, with an increasing demand on the part of the manufacturers, and a diminished supply on the part of the foreign producer, that I venture to submit to the British agriculturist the taking some steps calculated to meet the existing state of things, to diminish our dependence upon foreign countries, and by so doing confer lasting benefits both upon himself and upon his country. There is a happy conjuncture with this state of things, and the time at which the present demand arises. Formerly, when our laws imposed restrictions, upon the importations of grain for human food, our agriculturists might have conceived that there existed some kind of moral impediments in the way of increasing our home growth of articles for any purpose not of equal primary necessity. That impediment, whether rightly or wrongly I pronounce no opinion, has, however, passed away; and there is now no reason whatever why their fields should not henceforth be used for the production of any article that promises an adequate profit to the grower.

"It is," says Mr. Porter, of the Board of Trade, "especially desirable so to apply the productive power of the soil for the supply of articles as indispensable to the support of millions of our people as corn itself; and an additional inducement to the growth of flax, beyond that offered by other articles, may be found in the fact, that, to bring it to the same condition as that in which it is imported from foreign countries, calls for the employment of a considerable amount of human labour."

Objections to Growth of Flax: Agricultural.—But, if satisfied that ample markets exist for the sale of his produce, and that this sort of moral impediment to its growth has been removed, the agriculturist may still point to the objections entertained against the growth of flax, both on account of its supposed exhaustive character, and the trouble, risk, and expense attendant upon its preparations for markets, as reasons why he should not enter upon its cultivation. With respect to the exhaustive character of the plant, and its consequent injurious effects upon the soil, there appears to be no reason for supposing that under a proper and judicious mode of treatment, it is more exhaustive or injurious than any other seed-producing crop. An examination of the stem of the plant shows that those portions of it which are required for the purpose of manufacture, are derived almost exclusively from the atmosphere. Indeed to so small an extent do the inorganic properties of the soil enter into the fibre. that it has been found upon analysis that 100lbs. does not contain upon an average more than 2lbs. of mineral matters, including lime, magnesia, oxide of iron, carbonic, phosphoric, sulphuric acid, and silica. It is the woody parts of the plant, the resinous matter and the seed, with its capsules and husks, which absorb from the soil the phosphoric acid and other fertilizing ingredients. If the flax, unlike other crops, be not allowed to return anything to the soil; if the seed be thrown into the steep pit or "rettery" with the stem of the plant, and there destroyed; if, instead of being mixed with other food for cattle, or being used for manure, the straw or woody parts be rendered perfectly useless for such purposes, then undoubtedly flax, like every other crop, would be in itself an exhausting crop. Practical experience, however, has fully proved that under a judicious mode of treatment, so far from being an exhaustive, flax is actually a renovating crop. Numerous instances might be cited upon this subject. Mr. Edmunds, of Stonehouse, near Plymouth, stated in 1843, "It is a mistaken opinion that hemp and flax impoverish the land; from long experience I have found the contrary; these are crops that make a greater return as to manure than any corn crop."

Sir Richard O'Donnell, who is one of the largest cultivators of flax in Ireland, and who has grown to the extent of 700 acres in one year, states in *The Morning Chronicle*, "As the results of many years' experience, that when grown in its regular rotation, flax is far from being exhaustive, that it tends greatly to improve the soil and the character of the other crops in the rotation. It is above all most valuable for laying down land after wheat or oats, as the process of pulling the flax by loosening the earth around the roots improves greatly the quality of the grass crops."

Mr. Warnes, whose exertions as a practical agriculturist, to promote the extension of flax culture, are deserving of all praise, and whose system of agriculture rests upon the growth of flax, and the fattening of cattle in boxes, upon the seed, incorporated with other produce of the farm, both summer and winter, has introduced the flax plant into every rotation upon his farm; and, judging from the results of his own experience, he states that no rational objection can now be urged against the growth of flax, as the improved systems of cult[illegible]tion and preparation have rendered obsolete the clauses in old leases, prohibiting the culture of the plant, and the antiquated notion that fibre and seed cannot be secured at the same time. So far, therefore, as the exhaustive character of the plant is concerned, there appears to be no sufficient ground for entertaining such opinion.

Preparation for Market.—A further objection to the growth of flax is, however, to be found in the nature of the process hitherto employed previous to its preparation for market. So long as it shall continue to be considered necessary for the grower to embark in the present troublesome and uncertain process of steeping the flax in the straw, it will be in vain to expect any very general or extensive growth of the plant. Although considerable advance has no doubt been made in the preparation of the fibre during the last few years, still the best of the present modes is far from being suitable to the great body of the farmers of the United Kingdom.

Dew Retting,—Under the system of preparing the flax, hitherto four modes of steeping or retting the plant are resorted to. The first consists of the plan of "dew retting," or allowing the flax to remain exposed on grass land for a considerable number of days exposed to the action of the rain, dews, and atmosphere. The plan, however, is one which, from its obvious inconveniences, is not calculated to meet with general approval in the present advanced state of agriculture, and is indeed very rarely adopted.

Steeping in Streams.—Probably the best mode of steeping the flax is that of placing it in running streams, according to the mode adopted in Courtrai, the principal flax-growing district in Belgium. The flax so prepared generally realizes a much higher price than any other description. There are, however, certain peculiarities in the water of the river Lys which makes it admirably adapted for steeping purposes, and which are not possessed by any of the streams in this country. Independent of the peculiarities of the water, the steeping of flax in running streams cannot be made generally available in this country, as they are mostly too rapid in their character.

Steeping in Pits.—In the absence of suitable streams, recourse is had to a mode of steeping in pits or pools sunk in the ground. But so many favourable conditions are required to be obtained, and so many unfavourable ones to be avoided, in the selection of the site for the pool, and the supply of water required, that it is probable that a desirable or perfect steep-pool could not be formed in any part of the country. The soil forming the bottom and sides of the pit will have an influence on the colour of the fibre; clay, gravel, alluvial and peaty soil, will each impart some peculiar dye to the material, which more or less affects its value. The water used in the pit or pool must not be spring water, and it must not have flowed over any soil containing metallic deposits; and rain water is not well calculated for the purpose But, in addition to all these difficulties attendant upon obtaining the requisite means, the grower of flax has to contend against all the uncertainties and risk of either over or under-steeping his flax. "One sultry night," says one of the reports of the Royal Flax Society, "while it is in the steep, and nearly rotted sufficiently, is enough to carry the fermentation beyond the safe point. So much is this feared by farmers, that almost all flax is underwatered; and although much of it is afterwards mannered on the grass, yet the great proportion is brought to market with the shoves still unseparated in bits on the fibre." But while the sultry nights of summer are unfavourable to the steeping of flax, and inconvenient to the farmer, inasmuch as his labourers are at that season generally otherwise employed, it is also obvious that during the winter, when comparatively little farm labour is carried on, the process of steeping must be discontinued altogether, in consequence of the temperature.

SCHENCK'S SYSTEM.—A fourth process has within the last few years been very strenuously advocated by the Royal Flax Society in Ireland, which consists in steeping the flax in hot water. This mode, although doubtless an improvement upon any of the existing plans, still does not afford the means of obtaining that complete separation of the fibres which it is desirable to obtain. The Belfast Society too do not pretend that it is a mode generally applicable to the use of the producer of flax, for under what they term a "division of labour," they propose that the whole process of preparation, with the profits attendant upon it, and the additional labour required, shall be taken out of the hands of the growers, whom it designates as "a class of persons ignorant of the commonest chemical principles," and handed over to capitalists or speculators who would erect the required machinery in districts where the growth of a certain quantity of flax would be previously guaranteed. According to the reports of the Society, it appears that the profits upon the preparation of an Irish acre of flax, would be something like 200 per cent. upon the amount paid to the grower for his produce. The farmer is paid for his flax-straw a price ranging from £5 to £8 per acre; the steeper, upon this principle of "division of labour," receiving a net profit (I take the figures of the advocates of the plan) of upwards of £20.

Under such a system as this in operation, I doubt much whether the agriculturists of this country will feel very much disposed to enter upon the growth of flax to the extent which the circumstances of the case require; and in Ireland I have no doubt but that the whole scheme, fraught with so many of the abuses of the middleman system, will soon be found alike intolerable to producer and consumer. The whole of these difficulties may, I believe, be easily overcome, by the adoption of a system more in accordance with the present advanced state of practical science and knowledge, and which involves the entire abolition of the whole of the existing modes of steeping the flax in the straw.

PRESENT STEEPING INJURIOUS.—Not only are the present modes of steeping inconvenient and unnecessary, but they are highly injurious, as they impart injurious dyes to the fibre, and give to it an inequality of strength, which in the subsequent stages of manufacture and bleaching, are exceedingly difficult to be overcome. I have found this to be more particularly the case in the preparation of the flax into a material capable of being spun alone or in combination with wool and cotton upon the existing machinery. I am anxious that the grower should not resort to any of the existing modes in the preparation of his flax, for any one step taken in that direction entails subsequently the necessity of much additional trouble and expence, in addition to most materially affecting the equality of the strength of the yarns and thread produced from it.

PURCHASE IN THE STRAW.—The mode in which I should most prefer to purchase the flax would be in the straw, precisely as it is left after the removal of the seed. In this state it can be dealt with, with a far greater degree of certainty than in any other, and may be, within four-and-twenty hours from the time of its being pulled ripe from the field, placed in a condition fit for preparation for spinning upon any of the flax, cotton, wool, or silk machinery of the country.

FACILITY OF TRANSIT.—As there would be obviously many inconveniencies connected with the transit and carriage to a large distance of a material so bulky as that of flax in the straw, the grower might, in certain cases, by the use of a common breaker and a pair of toothed rollers, remove a great portion of the more bulky part of the plant, and thus send the fibre in a partially cleaned state to the market. The chaff obtained from this partial separation of the straw from the fibre, contains a very large proportion of the inorganic matter from the soil, which, not having been destroyed by the process of steeping, will form a most valuable material for mixing with cake, crushed seed, the mucilage formed from it, or other articles of cattle-food.

FURTHER PROCESS.—I am anxious, however, to see the growers of flax deriving the full amount of benefit which is to be obtained from the complete preparation of the material into a substance suitable at once for the markets of Belfast, Dundee, Manchester, and the woollen districts. I am aware that in the hands of individual growers the process, although not a complicated one, but which still requires some larger amount of acquaintance with the higher branches of chemistry than generally exists among the agricultural classes, might not be considered as generally available. I believe, however, that a plan might be very easily devised by which the flax grower might secure for himself these benefits which, according to the recommendation of the Royal Flax Society, are to be exclusively engrossed by speculators and capitalists. Indeed, several applications have already been made by parties, requesting me to grant them monopolies under my patent, for the preparation of flax, within an area of a certain number of miles in various parts of the country. I believe that such a course is one eminently calculated to rob the grower of his legitimate profits, and to retard that extension of the growth of flax which I conceive to be indispensably necessary for the welfare of the country. Within the last few days I have been informed of a case, in which a gentleman in Ireland, has for several years grown flax to a very great extent in one of the districts in which a monopoly is possessed by a "steeper," under the patent system. Possessed of this monopoly over a large tract of country, such an individual has the whole of the growers entirely at his mercy, and can offer them whatever sum he pleases for their produce, knowing full well that no other available market exists for many miles. Indeed, to such an extent has this system of extortion been practised, that many of the growers have been compelled, after keeping the flax in stack for the last two or three years, to sell for 80s. per ton that for which they would have received, but for this monopoly, from £3 to £4. The gentleman to whom I have referred has now about 700 tons of flax in stack, which he will not sell at the ruinous price offered by the "steeper," and further states that he will not sow a single acre of flax in the present year, unless some fresh mode of disposing of his produce is created.

JOINT STOCK ASSOCIATIONS.—The mode in which I would venture to suggest this system may be prevented, and the growers be enabled to derive the full benefit of the preparation of the flax, would be, by establishments in different localities throughout the country, formed by means of joint subscriptions among the flax-growers in certain districts, at which the preparation of the material could be carried on, and the profits derived from the process distributed at stated periods among the shareholders in proportion to the amount of shares or interest which they hold in the undertaking. This system is one which has been found to work well among the cultivators of the sugar cane in the West Indies and there is no doubt but that it would work equally well among the producers of flax in this country.

LOCAL SOCIETIES.—A second mode by which this object could be attained would be by the erection of suitable premises and apparatus by each of the various local agricultural associations or farmers clubs in the country, the buildings and plant being the property of the club or association, and the use of them being allowed to members or subscribers, upon payment of such sums per ton or per acre as might be agreed upon by the parties.

LANDLORDS.—There is also a third mode which might be made available in the case of the failure of either of the preceding plans, which is, that of the erection of the required accommodation by the landlords for the use of their tenants. upon the payment of such sums as would be calculated to cover the interest of the capital invested, and the cost of keeping the buildings and apparatus in an efficient state of repair.

PROFIT.—There remains yet one very important point to which I have at present only incidentally alluded—I mean the profit to the farmer upon the cultivation of flax. If I have succeeded in convincing you of the extent and certainty of the markets which exist for the produce, and of the absolute necessity which exists for your endeavouring to obtain possession of those markets, I have no doubt that I shall be enabled most satisfactorily to prove that you can do so with considerable profit and advantage to yourselves.

SEED AND FIBRE.—It will be found, in the first place, that the profit derived from flax, under the present modes of steeping, combined with the saving of the seed, is considerably greater than can be obtained from the cultivation of wheat, at present prices. Mr. Warnes states that the profit upon fourteen acres of flax, grown and prepared by him last year, was upwards of £6 per acre over that of his wheat.

His figures are—

	£	s.	d.
Prepared flax sold at Leeds	£238	16	0
Value of seed........................	126	0	0
	364	16	0
Deduct cost of preparing flax	140	0	0
Gross profit	224	16	0
Value of produce of 14 acres of wheat at 38 bushels to the acre, at 40*s*. per quarter	133	0	0
Total balance in favour of flax over wheat, not including 6 tons 6 cwts. of husks equal to hay, 26 cwts. of tow, and many loads of refuse for littering cattle	£91	16	0

Seed Alone.—The above is an instance in which both the seed and the fibre were saved and prepared. There are cases, however, in which the flax is grown solely for the purpose of seed; and others in which the seed is wasted or destroyed, the only object in such case being to obtain the fibre. In either case there is a greater profit to the grower than can be obtained from almost any other crop. Mr. Beare, probably one of the best farmers in the county of Norfolk, grows every year one or two acres of flax after wheat, and without manure, for the seed only. His crop last year yielded 26 bushels per acre, which he sold at 10s. per bushel, being £13 per acre; while his wheat crop did not exceed five quarters, which sold at 40s., would yield but £10, leaving a profit in favour of flax seed alone over wheat (the straw being used as litter for cattle) of £3 per acre. I may state upon this point, as a general rule, under the present system, that, when grown for its seed alone, the flax fibre is coarse, and is not considered of so much value as that of a finer description.

Fibre Alone,—Seed Destroyed.—Numerous instances might be adduced from the reports of the Royal Flax Society to show that, even in cases where the seed has been thrown into the steep pits and destroyed, the profit upon the sale and preparation of the fibre was still greater than than that of many other of the crops. As the example thus set is one, however, which is not likely to be generally followed by enlightened agriculturists in this country, it is unnecessary for me to trouble you with any figures upon that point.

New Process.—These, however, are returns obtained under the present mode of steeping and preparing the flax. According to the plan which I venture to submit, the returns will, I anticipate, be even more favourable to the grower.

Sold in Straw.—In the case in which he may elect to dispose of his flax in the straw, the farmer would derive the full value of his crop of seed, and the straw would be worth to him 4*l*. per ton, the produce being about two tons per statute acre. He will not be required, as is the case at present, to pull his flax before it is perfectly ripe, or before the seed has been fully and completely formed. Indeed the coarser and more developed is the stem of the plant, the more valuable will it be for the purpose of adaptation to the woollen and cotton machinery, and the fine gossamer threads can be produced from it with greater certainty and precision than when pulled in an earlier stage of its growth. The grower, therefore, need be under no fear as to the fineness of his crop, and he may obtain from it as large an amount of seed as his land will produce.

PARTIAL CLEANING.—If the difficulty of transporting the flax in the straw to any great distance should render it necessary for the grower to reduce its bulk, by the removal of some of the woody part of the plant, he will obtain by so doing, in addition to the seed, a valuable article of food for his cattle, and the enhanced value of the fibre will more than repay the amount of labour bestowed upon it.

COMPLETE PREPARATION.—If disposed to carry the preparation of the flax to its final stage of adaptation to the spindles of the manufacturer, whether cotton, linen, wool, or silk, he will derive a profit larger and more certain than he can obtain under any of the present processes; while, from the refuse straw impregnated with the salts used in its preparation, he will obtain a manure of the richest and most fertilising character.

SOCIAL ADVANTAGES.—One word upon the social advantages which must result from an extended cultivation of flax, and my remarks (already I fear too protracted) will have been brought to a close. Upon this point, I cannot do better, than quote a few words from the report of one of the special correspondents of *The Morning Chronicle*, who visited the small village of Trimingham, where Mr. Warnes has for several years most sedulously and successfully devoted himself to the cultivation and preparation of the plant.

"The condition of the inhabitants of the village," he says, "was a few years since most deplorable, and the amount of pauperism exceeded that of the adjoining parishes. Since the introduction of flax culture, this state of things has passed away. There is not a pauper in the parish; the poor-rates are nominal; there is not one able-bodied labourer, or any portion of his family, who may not obtain constant employment throughout the whole of the year, and the moral and social state of the village will bear comparison with most. If the growth of flax can produce results elsewhere similar to those which I have witnessed at Trimingham, there can be no doubt that the sooner it is cultivated to a greater extent in this country, the sooner will the enormous burden of pauperism decrease; and happiness and contentment be more generally diffused among the large masses of our labouring population."

The communication was received with considerable applause.

DIRECTIONS FOR THE CULTIVATION OF FLAX.

The following plain and simple directions with respect to the preparation of the land and cultivation of flax, are extracted from the valuable directions on the subject, compiled by the committee of the Royal Irish Flax Society from a mass of information obtained by the society, and their agriculturists during the last ten years. Some very useful instructions on the same subject are contained in a small and very valuable pamphlet called "The Flax Grower," by G. Nicholls, Esq., late secretary to the Poor Law Board, published by Knight of Fleet-street; in the various publications of Mr. Warnes, by Ridgway; and in "Flax: its Cultivation and Management," by E. F. Deman, late technical instructor to the Royal Flax Society; and "Flax: its Manufacture on Schenck's System," by A. Bernard and Koch; also published by Ridgway.

SOIL AND ROTATION.—By attention and careful cultivation, good flax may be grown on various soils; but some are much better adapted for it than others. The best is a sound, dry, deep loam, with a clay subsoil. It is very desirable that the land should be properly drained and subsoiled; as, when it is saturated with either underground or surface water, good flax cannot be expected. In Belgium, it invariably follows a corn crop—generally oats; and in this country (Ireland) where oats is such a usual crop, the same system might be profitably pursued; but it must be understood, that it is only from oats following a green crop or old lea, and never after two or three succeeding crops of oats, which bad practice still prevails in some districts. Except on very poor soils, a better crop will be produced after grain, and the double benefit of the grain and flax secured. If old lea be broken up. and potatoes planted, followed by a grain crop, a very fine crop of flax may be obtained in the ensuing year.

PREPARATION OF THE SOIL.—One of the points of the greatest importance, in the culture of flax, is by thorough-draining, and by careful and repeated cleansing of the land from weeds, to place it in the finest, deepest, and cleanest state. This will make room for the roots to penetrate, which they will often do to a depth equal to one half the length of the stem above ground. After wheat, one ploughing may be sufficient on light, friable loam, but two are better; and, on stiff soils, three are advisable—one immediately after harvest, across the ridges, and two in Spring, so as to be ready for sowing in the first or second week of April. The Spring ploughing should be given some time before sowing, to allow any seeds of weeds in the land to vegetate, and the harrowing in of the flax-seed will kill them, and save a great deal of after weeding. Following the last harrowing, it is necessary to roll, to give an even surface and consolidate the land, breaking this up again with a short-toothed or seed harrow, before sowing, which should be up and down, not across the ridges or anglewise.

SOWING.—The seed best adapted for the generality of soils is Riga, although Dutch has been used in many districts of country, for a series of years, with perfect success. In buying seed, select it plump, shining, and heavy, and of the best brands, from a respectable merchant. Sift it clear of all the seeds of weeds, which will save a great deal of after trouble, when the crop is growing. This may be done by fanners, and through a wire sieve, twelve bars to the inch. Home-saved seed has produced such excellent crops, of late, that it is strongly recommended that every farmer should only sow, each year, as much foreign seed as would produce a sufficient quantity for his flax crop of the following season. The thinner portion of the crop would be the best for this purpose, as, when flax grows thin, it produces much seed. This plan, besides the saving effected in the price of foreign sowing seed, would effectually secure the farmer from any danger of loss from fraudulently-made-up seed. The proportion of seed may be stated at three and a-half imperial bushels to the Irish or Plantation acre; and so on in proportion to the Scotch or Cunningham, and the English or Statute acre. It is better to sow too thick than too thin; as, with thick sowing, the stem grows tall and straight, with only one or two seed capsules at the top; and the fibre is found greatly superior, in fineness and length, to that produced from thin-sown flax, which grows coarse and branches out, producing much seed, but a very inferior quality of fibre. After sowing, cover with a seed harrow, going twice over it—once up and down, and once across or anglewise; as this makes it more equally spread and avoids the small drills made by the teeth of the harrow. Finish with the roller, which will leave the seed covered about an inch—the proper depth. A stolen crop of rape or Winter vetches, or of turnips of the stone or Norfolk globe varieties, may be taken, after the flax is pulled. Rolling the ground after sowing is very advisable, care being taken not to roll when the ground is so wet that the earth adheres to the roller.

WEEDING.—If care has been paid to cleaning the seed and soil, few weeds will appear; but if there be any, they must be carefully pulled. It is done in Belgium by women and children, who, with coarse cloths round their knees, creep along on all-fours. This injures the young plant less than walking over it (which, if done, should be by persons whose shoes are not filled with nails.) They should work, also, facing the wind, so that the plants laid flat by the pressure may be blown up again, or thus be assisted to regain their upright position. The tender plant, pressed one way, soon recovers; but, if twisted or flattened by careless weeders, it seldom rises again.

PULLING.—The time when flax should be pulled (if intended to be treated for flax cotton) is, when perfectly ripe; if it is desired to obtain a fine fibre suitable for the present flax manufactures, the best time for pulling is, when the seeds are beginning to change from a green to a pale brown colour, and the stalk to become yellow, for about two-thirds of its height from the ground. When any of the crop is lying, and suffering from wet, it should be pulled as soon as possible, and kept by itself. If the ground has been thorough-drained, and laid out evenly, the flax will be all of the same length. It is most essential to take time and care to keep the flax even, like a brush, at the root ends. This increases the value to the spinner, and, of course, to the grower, who will be amply repaid, by an additional price, for his extra trouble.

The following directions with respect to the removal of the seed from the flax, are given in the *Flax Grower*, by G. Nicholls, Esq.—

"The separation of the seed is usually effected by beetles or blocks of wood about nine inches long and four inches square, into which a handle of convenient length, and somewhat bent, is fixed, and with which the seed is readily beaten out. It may also be removed by simply drawing the flax stalks through a row of iron spikes set upright in a wooden frame, and so close to each other as to catch and separate the bolls containing the seeds, as the stalks are drawn through."

The flax may be stacked when pulled perfectly ripe and dried, either before or after the removal of the seed, as may best suit the convenience of the grower.

Further information with respect to the terms upon which the inventor is prepared to grant licenses, as well as the mode to be adopted in the preparation of the flax, may be obtained upon application to Mr. J. S. Christopher, 26, Gresham Street, where the machine for partially separating the straw from the fibre may be seen.

A suggestion has been made by a correspondent, that the price of linseed mentioned by Mr. Druce at page 23, may be a trifle too high. As seed, it may be worth, and at this moment is worth more than 8*s.*; 10*s.* and 12*s.* being paid. But for crushing for oil or for cake, it has been suggested as a calculation for the future, that 6*s.* 6*d.* or 7*s.* is nearer the mark. We think for seed, that English will always have a preference, and be worth the price named, and even for crushing, we think that 8*s.*, at least 7s., will be the average when well cleaned.

APPENDIX A.

PROSPECTUS OF CLAUSSEN'S PATENT FLAX COMPANY (PROVISIONALLY REGISTERED).—The National importance of the Chevalier Claussen's processes for the preparation of Flax is now so universally admitted, that it is needless to dilate upon them. A few statistics, however, in a compressed form, may be satisfactory to Capitalists about to join this Company, formed for the extension of the growth and manufacture of this important British Staple.

Desirable as general intercourse with Foreign Nations is, still a dependance upon any country for any one staple article is much to be deprecated. Unfortunately, as regards the article of flax, we are almost entirely dependant for our supply upon foreign countries. Even our supply of oil-cake, the produce of the flax plant, so important to our graziers, to the extent of 70,000 tons per annum, is obtained from foreign countries, its annual value exceeding £500,000.

The quantity of linseed imported for crushing into linseed oil amounts to 650,000 quarters, the value of which, at 7s. per bushel, is £1,820,000.

The quantity of linseed imported for sowing purposes is valued at £200,000. These three items alone amount in value to a sum of £2,520,000.

One of the objects sought to be obtained by this Company is, to produce upon our own soil, with profit and advantage to the farmer, the flax required to meet these enormous demands.

This, however, is but one collateral advantage which the Company proposes as its object. The full importance of our flax manufactures may be estimated from, the fact that our manufacturing consumption of flax amounts to about 100,000 tons—not more than one-third of which is produced at home. This quantity being worked up into linen, etc., exceeds in value £5,000,000 annually; and were a greater quantity produced in this country, the consumption of the manufactured article would increase in a corresponding proportion. As showing the character of the linen trade, it may be stated, that the exports of linen alone, in the last twenty years, have increased from 50 millions to 105 millions of yards, its declared value from £1,700,000 to £3,000,000. The import of foreign flax in 1831, was 936,000 cwt.; in 1842, it had increased to 1,800,300 cwt., since which time it has continued to increase. The value of the increased imports, about two and a half millions sterling, is paid for principally in money sent out of the country, instead of benefiting our own farmers. The total value of the before-mentioned items is £9,100,000.

In proposing, therefore, to apply capital to the extension of the growth and manufacture of flax, it is not proposed by the promoters to force a cultivation or a trade, that is unsuitable to this country; but rather to give increased facilities to our great existing agricultural and manufacturing interests. To whatever extent the growth of flax in this country may reach, experience and analogy would lead us to expect, that a commensurate demand will arise for the produce. Population increases both here and abroad, and demands new exertions to keep pace with the public requirements. The want of raw material alone limits the amount of our manufactures, and retards the erection and operation of new looms, and the employment of additional labour. The signal prosperity of the North of Ireland, more particular Belfast, may be cited with the utmost confidence as proving the advantages to be derived from the growth and manufacture of flax.

Irrespective, however, of the great demand existing for flax, and its ordinary application to linen fabrics, the Chevalier Claussen, by a happy invention, is enabled to convert the flax fibre into a substance so completely similar to cotton, that a new and most extensive demand for the fibre has already arisen to encourage the cultivation of flax. The fabrics that have been made partly of American cotton, and partly or entirely of Claussen's flax or British cotton, take in a range of goods which will probably require 200,000 tons per annum of this new material to supply Lancashire and Yorkshire alone.

To produce this quantity, it will call into profitable cultivation at least 1,000,000 acres beyond the present breadth of land under flax.

By these processes of Chevalier Claussen, the *Cotton* manufacturer obtains a fibre capable of being spun and woven on the ordinary cotton machinery either alone or mixed with cotton in any proportions ; the yarns made of which, are stronger than cotton, while the fibre is produced at less price than cotton, or any other filament, can be imported at a profit.

The *Flax* spinner, by this process, has the fibre prepared cleaner, cheaper, and more expeditiously than by any existing process. more easy to spin, and capable of being bleached in one-tenth of the time occupied in the customary process, and, consequently, without the usual loss and waste.

The *Woollen* manufacturer may also be benefited by the use of flax prepared by the processes of Chevalier Claussen, inasmuch as he may obtain a fibre capable of being spun with wool in any proportion on ordinary woollen machinery; the cloth made from such mixed yarns filling up in the milling stooks exactly as if all wool, and it is stronger and more durable than a cloth entirely wool, while the prepared fibre, capable of this combination, may be produced at less than one-fourth of the price of ordinary low wools.

The interest which the *Agriculturists* possess in these processes has already been alluded to; but it will bear some further remarks. The demand for the raw material produced by the farmer, if rendered marketable, may well be called "boundless." By Claussen's first mechanical process, the plant is deprived of its excessive bulk and weight, and is thus rendered easy of transport by the farmer, thereby removing the chief existing impediment to its growth. The bulky nature of the straw also prevents importation of foreign straw, thus operating in favour of the home grower.

All these great changes, which time would gradually effect, require for early development the aid of a powerful Company; private means, however extensive, and private enterprize, however energetic, are inadequate for the immensity of the field proposed to be occupied by Claussen's Patent Flax Company. To prepare the quantity already required, is far beyond the means of a private undertaking—establishments are wanted in various flax districts to purchase the flax straw of the farmer near his own homestead, there to reduce its bulk and to convert it into British cotton, and to send it to Manchester and other markets. To erect these establishments and to afford these facilities to farmers, needs the capital of a truly National Company. The intention is to aid the farmer as well as the cotton, the woollen, and the linen manufacturer.

No staple has such general adaptation, none is so truly national, as the flax plant.

The recommendations obviously belonging to this Company will be enhanced, when it is considered that British cotton is the produce of free instead of slave labour, and that the abolition of slavery will be accelerated by the success of the Company. It may also be stated, that the farmer and the farmer's family will have the means of making a market for their own produce, to an unlimited extent.

The employment of the poor will be also greatly promoted by the extended growth and preparation of flax.

An increased growth this year, in consequence of the introduction of the Chevalier Claussen's process, proves that the farmers are ready to grow; the manufacturers at the same time are ready to buy all the British cotton produced; the only link wanting, therefore, in the chain, is the formation of the Company, for the purchase of the flax and the preparation of the fibre.

Profit is the basis of all Companies, and subjoined are presented some details, to show the advantages in this point of view, which may be expected from the formation of Claussen's Patent Flax Company.

The farmers, as well as the manufacturers, naturally will become interested in the Company, and thus participate in the profits to be derived from the after-preparation of the material grown by themselves. A cheap fibre, produced by the successful operations of this Company, cannot fail to create a common interest between farmer and manufacturer, and give increased employment to the labouring population.

CALCULATIONS AND ESTIMATES.

On the average, *four* tons of flax straw will produce one ton of British cotton.

The cost of *five* tons of flax straw, say at £3 per ton, is -	£15	0	0
The expenses of "breaking," "cutting," and "blowing," will not exceed - - - - - - - - -	1	19	0
Chemical preparations and ingredients employed - -	1	5	0
Thus one ton of fibre, called British cotton, equal to fair quality American cotton, will cost, at the utmost - -	£18	4	0
Add to this (where required) the bleaching - - -	1	0	0
Washing, drying, etc. etc. - - - - - - -	1	16	0
Total cost of the British cotton bleached and washed, per ton	£21	0	0

Or 2¼*d.* per lb., and which will readily sell at from 4*d.* to 6*d.* per lb.

For *Wool*, the expenses of preparation are about the same; but it requires blowing and carding well afterwards, which processes are extra, say 1*d.* per lb., but it will then sell to the wollen manufacturers at from 6*d.* to 10*d.* per lb.

Thus the profits are just 100 per cent.; but allowing for interest on capital invested, the purchase of the exclusive licence from the Patentee, according to agreement, the cost of buildings, machinery, and the management of the Company, the profits may be stated always to exceed 50 per cent. per annum.

Each plant, erected at the cost of £2000, would prepare 10 to 15 tons per week, say 500 tons a year, and a profit of £5 per ton only would amount to £2500 a year.

But 200,000 tons of British cotton are wanted, so that a great many establishments on a large scale are required to supply the wants of the country.

Specimens, shewing the whole of the Chevalier Claussen's process, from the flax-straw to the finished cotton, linen, or wollen fabrics, in unbleached, bleached, and dyed states, are shewn in the South Gallery of the Great Exhibition. The hand-book to the official catalogues of the Great Exhibition, edited by Robert Hunt, Esq., thus describes the advantages of the process as exhibited in the Chevalier Claussen:—

"In the first stage it will enable the farmer, by mechanical means, and with little trouble and expense, to reduce the bulk of his flax crop, so as to give him access to markets and render it marketable. It will enable him at the same time to preserve, to be returned to the land, those portions of the crop which tend to exhaust the soil; the produce being a description of fibre adapted to the coarser kinds of the flax manufacture. By the second, or boiling operation, the long troublesome, and noxious process of steeping may be dispensed with, in the preparation of flax for the finer purposes, for which long fibre is spun in the ordinary way. Lastly, by reducing the flax to short fibre, and by splitting it up by means of the chemical process above described, a great extension of the demand for flax may be expected, to be spun on cotton, wool, and silk machinery alone, or in combination with any of those substances. All these results will have been obtained through microscopic researches into the structure of the flax plant, and the application of chemical knowledge to the improvement of old processes for preparing it for use."

APPENDIX B.—REMARKS OF THE MORNING CHRONICLE.

THE GREAT EXHIBITION.—Continuing our daily descriptions of the articles at the Exhibition, we propose now to call the attention of our readers to one of the most important and interesting inventions there displayed—that of the Chevalier Clausen's Flax Cotton.

FLAX—No. 3.

The subject of Flax Cotton, paradoxical as its name may appear, is one not altogether new to the readers of the *Morning Chronicle*. Some time since we announced the discovery of a process by which the harsh and elastic fibres of the flax plant might be converted into a soft, down-like substance, analogous to the fibres of cotton, and capable of being treated, in its after stages, in every respect similar to it. But we stated that, unlike cotton in one respect, it possessed felting properties, which adapted it equally for spinning in combination with wool, and that fabrics produced from a mixture of flax and cotton, or flax and wool, possessed a degree of softness and strength which did not characterise those formed entirely of the one staple. We stated also that, in consequence of the alterations effected in the character of the fibre, the flax would be capable of taking dye, and receiving impressions similar to any other fibre, whether animal or vegetable; and further, that the substance so produced could be prepared and sold with profit to the producer, at a price less than that at which cotton could be profitably imported into this country.

The announcement of such a discovery was received by many persons with incredulity. Some supposed that we had been grievously imposed upon; but others, judging more correctly, inferred that we should not have committed ourselves day after day to statements of facts, the accuracy of which we had not the fullest opportunity of testing and verifying. For this reason we declined to notice attacks made upon us by parties who ought to have been the first to hail such an invention, which, if successful, would do so much to promote and encourage the growth of flax in the United Kingdom. We thought it sufficient to leave the Great Exhibition to give a satisfactory answer to all objections, and to afford a practical demonstration of the accuracy of our statements. The event has more than justified our anticipations; and in the numerous specimens exhibited by Chevalier Claussen in the south gallery of the Exhibition, as well as in the departments of Canada, Russia, France, and Austria, will be found the most complete confirmation of every statement which we have made upon the subject.

With respect to the great value of the invention, when carried out, to the country—whether regarded in an agricultural or manufacturing point of view—whether as affording to our agriculturists a market for a profitable and beneficial crop, as rendering them independent of foreign aid for their supply of oil-cake produced from the flax-seed, or as bringing to the assistance of the cotton and woollen manufactures a valuable auxiliary, available at all times and all seasons—there cannot, we apprehend, exist a difference of opinion in any reasonable mind.

The history which Chevalier Claussen gives of the causes which first led him to experiment upon flax, for the purpose of "cottonizing" it, is exceedingly interesting, inasmuch as it shows that his success was the result of inductive research, and not the offspring of mere chance. He tells us that, in wandering along the luxuriant banks of one of the Brazilian rivers, his attention was attracted to a white, down-like substance, adhering to the branches of trees, overhanging and touching the stream. On obtaining a quantity of it, he was so pleased with its character that, thinking he had discovered some hitherto unknown vegetable product, he was determined to trace it, if possible, to its source, and to ascertain the plant which had yielded it. With the ardour of a naturalist he commenced his task, and eventually found that the substance had been washed from a bed of flax-straw, the produce of some of his own land, and which, long before, he had caused to be thrown, as useless, near the banks of the river. To this heap the swollen waters had occasional access—fermentation and the decomposition of a portion of the plant had taken place—and in time the influence of natural chemistry had so separated the filaments of the flax fibre as to give the mass a cotton-like appearance; and some of it, having been washed into the river, had been arrested by the overhanging branches. Although the substance thus accidentally discovered was far from being in that condition which would fit it for the hands of the cotton-spinner, yet, even in its then imperfect state, it led the Chevalier to entertain the idea of the possibility of completing, by the aid of artificial chemistry, that which nature had but partially accomplished.

The first object worthy of notice in the stand of Chevalier Claussen, is a machine for the purpose of reducing the bulk of the flax crop by the removal of a considerable portion of the straw from the stem of the plant, leaving the fibre in a partially cleaned state. Hitherto the great difficulty with all growers of flax has been the preparation of the crop for market; the grower having been compelled either to resort to the tedious and precarious process of steeping his flax, or to dispose of it to factors as it came from the field, upon any terms which they might think proper to offer, as the great bulk of the crop prevented the farmer from sending it to market in the same manner as he would send his grain or other produce. In order to extricate the farmer from this dilemma, and to afford him the means of availing himself of the best market for his produce, this machine has been constructed, which will enable him, without resort to any steeping process, to reduce the bulk of his flax, and at the same time admit of his returning to the soil, in the shape of the straw removed, a large portion of the nutritive matter extracted—and which, formerly destroyed in the steeping process, had given rise to an opinion very generally held by agriculturists, that flax was an extremely exhaustive crop. Several specimens of the flax thus cleaned by the machine are shown.

The flax thus produced is in this stage adapted for the manufacture of sail cloth and other coarse fabrics, ropes, cordage, etc. It requires, however, a more minute separation of the fibres to adapt it for the manufacture of finer descriptions of fabrics. To make the subject perfectly familiar to the reader, it will be necessary to explain the structure of the flax fibre. The stem of the flax plant consists of three distinct parts—the shove, straw, or woody matter which supports the plant; the fibres, which cover the outer surface of the straw; and the gum or resin, by which the fibres are held together. The machine, as we have already described, removes the straw only, and partially disintegrates the fibres held together by the resinous substance. Hence their coarseness and their suitability for coarse fabrics only. In order to adapt it for the linen manufacture, as also to carry it one stage further in the process of preparation for the cotton or wool spinner, it is necessary to obtain a more complete separation of the fibres. This object is to be accomplished by the removal of the resinous and glutinous substance which binds them together; and as it does not appear that mechanical power will completely effect this, recourse is had to chemical action.

A second series of samples shown by the Chevalier Claussen consists, therefore, of long flax prepared for the linen manufacturer by a process which appears completely to obviate most of the inconveniences attending the ordinary modes of steeping. By this process the flax is boiled (either in the straw as it comes from the field, or in the state in which it leaves the growers' hands, with its bulk partially reduced by mechanical means), for two or three hours in a weak solution of caustic soda. The action of the soda dissolves completely the resinous and other substance of the plant, while, by its combination with the oleaginous matters that it contains, it produces a soapy kind of liquid, which removes at the same time all the colouring matter from the plant—leaving it, unlike flax steeped upon the ordinary mode, perfectly free from all stain and impurity, and thereby facilitating greatly the after processes of bleaching or dyeing, whether in the yarn or in the finished cloth.

Passing from the specimens illustrative of the processes of preparing the flax for the linen manufacture, we next come to the interesting series of samples, showing the mode by which the flax is prepared for the cotton spinner. The first step necessary in this process, is the reduction of the flax fibre to lengths adapted for spinning on cotton machinery. These required lengths are obtained by a very nicely adjusted piece of mechanism, similar in its principle to the ordinary chaff-cutting machines. It is here that the greatest accuracy is required, as, if any of the fibres exceed the required length, the yarns produced will "bite" in the rollers, and present the appearance of being "overworked," and will also be unequal in strength. The flax may be cut for this purpose either in the straw as it comes from the field, with its bulk partially reduced, or after it has undergone the boiling process. But in order to spin flax successfully upon cotton machinery, something more is required than the mere reduction of the length of the fibre. After having undergone the boiling or steeping process, and when the glutinous matter which binds them together is removed, the fibres, however fine, are still harsh, coarse, and elastic, when compared with cotton; and the quantity in length of yarn obtained from equal weights of flax and cotton would be so greatly in favour of the latter, as completely to preclude the possibility of the former being substituted for it. For instance, one pound of fair bowed Georgia cotton, spun into 30's, will yield 25,200 yard; while one pound of flax spun into "line" of a number about equal to that of the cotton yarn, would produce but 21,000 yards; giving an advantage of 4,000 yards in the pound to cotton over flax. In addition to this, the yarn would be produced from the raw cotton, by cotton machinery, at an expense of less than threepence, while that of the flax would be about tenpence the pound when prepared by the flax machinery. This is a difficulty which has hitherto lain at the root of every attempt to spin flax successfully and profitably upon cotton machinery. A minute's attention, however, to the structure of the flax fibre suggested to the Chevalier Claussen a mode by which it might be successfully overcome. The fibre of flax is cellular, and is formed of the union of bundles of smaller fibres which may be compared to the Roman fasces. If by any process the character of the fibre could be altered—if the minute hair-like cellular substance could be further divided—it is obvious that the required increase in length and diminution of bulk could be obtained. But how was this feat to be accomplished? Hair-splitting, even upon a small scale, has always been considered as partaking somewhat of the impracticable: and to accomplish this process upon a large scale—to split this fine hair-like substance by hundred-weights at a time, and to do it at a trifling cost—would appear to be beyond the bounds of possibility. The feat has, however, been accomplished by the Chevalier Claussen—and what is more, the result is effected instantaneously.

One great advantage in connection with this mode of preparing the flax—and it is one of the highest importance to the agriculturist—is, that the flax will not be required to be pulled before it is fully and completely ripe, as is now the case where a fine flax is required. A valuable crop of fully ripened seed may therefore be obtained, in addition to the fibre. Moreover, we are told that the flax cotton may be prepared at a cost considerably less than that at which cotton can be profitably grown and imported. Of course it is not to be supposed that, in order to prepare flax cotton, any person would act so absurdly as to purchase flax steeped and scutched in the mode in which it is usually brought into the market for the flax-spinner. The great point in the invention is, that the flax may be taken from the field, and converted into a soft, cotton-like substance, at a cost considerably less than that incurred even in the ordinary modes of steeping and scutching, in order to prepare it for the flax-spinner. Prepared for the market by steeping and scutching, flax will range in price from £40 to £120 per ton; and to operate upon a fibre so prepared, in order to produce a material which would sell for half that amount, would be, indeed. something like an attempt to transmute gold into copper. This, however, is not the object of the invention. The Chevalier Claussen commences, as is shown by the samples in his stand, at the same point where the ordinary flax-dresser commences—at that of the flax in the straw; and by producing a larger quantity at a greatly reduced cost, and without incurring any waste in the shape of refuse tow, he obtains an article capable of being spun on the ordinary cotton machinery, and of being sold at a price which, while it is less than that of the long flax prepared for the linen manufacturer, is also lower than that at which cotton itself can be profitably grown, either by free or slave labour, in the great cotton-producing district of the United States.

The flax cotton is shown dyed in various colours immediately after carding; it is also shown dyed in various colours in yarns spun entirely from flax, or mixed with various proportions of cotton; and in the case of the mixed yarns no difference of colour of the two substances is at all perceptible—thus showing that the flax so prepared is capable of taking the same opaque dye as ordinary cotton. Some samples of yarn prepared as silk are also displayed, and, as illustrating the great command which the inventor has over this fibre: these are dyed in colours possessing all the glossiness and brilliancy of the most beautiful silk. Several pieces of calico, formed entirely of flax, and others, formed of a mixture of flax and cotton, bleached and dressed as ordinary cloth, are exhibited.

Continuing his inspection, the visitor will next see specimens of yarns formed of a mixture of wool and flax-cotton. Hitherto it has been found impossible to felt or mill yarns, or fabrics formed of a mixture of flax and wool, or even to produce a yarn formed of these two substances, as the flax naturally does not possess the same felting properties as wool. As we stated, however, at the commencement, the flax, and even cotton itself, undergoes a considerable change in its structure when prepared by the Chevalier Claussen, and the former is found to felt equally as well as wool. Indeed, some specimens of felt formed of rabbit's hair and flax are shown, as illustrative of the great felting properties which the "cottonized" flax fibre possesses. In addition to the mixed wool and flax-cotton yarns shown, there are displayed several pieces of excellent flannel formed of those yarns, and pieces of broad cloth, grey and dyed, of a remarkably clean, bright, and pure colour, and of great strength and durability. The great advantages which this discovery places in the way of the woollen manufacturer are too obvious to require comment. A substance equal in every respect to wool, and admirably adapted for mixing with it, is given to the manufacturer at a price something less than one-fourth of that of his ordinary staple—thus enabling him to produce a mixed woollen fabric at a proportionally lower rate than he is able to manufacture his woollen goods; while, at the same time, the purchaser will be benefited, by obtaining at a greatly reduced price an article equally durable with one formed entirely of the more expensive fabric.

The last series of specimens shown are those which illustrate the applicability of the flax-cotton to the purposes of the Leicester and Nottingham hosiery trade. The articles shown consist of stockings, drawers, and other ordinary articles of hosiery, and both in colour and in texture they are everything which can be desired. To those interested in the continued and increased prosperity of our great agricultural and manufacturing industries, we would recommend an attentive examination of the articles shown by the Chevalier Claussen. The advantages attendant upon flax culture are points from which we have abstained in our present remarks; but we would cordially commend to the notice of agriculturists the desirableness of immediately putting themselves in a position to supply the extensive demand which will no doubt shortly arise for flax, and to obtain possession of a market for the supply of which our energetic transatlantic cousins appear to be already making great preparations.

Some specimens of flax cotton dyed and prepared as Berlin wool are shown by Messrs. Quitzow and Schlesinger, of Bradford, in the woollen compartment in the English side.—*Morning Chronicle, August* 1, 1851.

APPENDIX C.—EXTRACT FROM NEW YORK TRIBUNE.

FLAX-COTTON.

Mr. Horace Greeley, of New York, has devoted the twelfth of his series of articles in the *New York Tribune*, called "Glances at Europe," to the "flax-cotton revolution." Mr. Greeley is at present staying in London; and having been selected as one of the jurors of the United States, he has, in that capacity, devoted considerable time and attention to the examination of the articles in the Great Exhibition. He states:—

"M. Claussen is here, and has kindly explained to me his processes, and shown me their products. He is no inventor of flax-dressing machinery at all, and claims nothing in that line. In dressing, he adopts and uses the best machines he can find, and I think is destined to receive important aid from American inventions. What he claims is mainly the discovery of a cheap chemical solvent of the flax fibre, whereby its coarseness and harshness are removed, and the fineness and softness of cotton induced in their stead. This he has accomplished. Some of his flax-cotton is scarcely distinguishable from the Sea Island staple, while to other samples he has given the character of wool very nearly. I can imagine no reason why this cotton should not be spun and woven as easily as any other. The staple may be rendered of any desired length, though the usual average is about two inches. It is as white as any cotton—being made so by an easy and cheap bleaching process. M. Claussen's process, in lieu of the old process of rotting, requires but three hours for its completion. It takes the flax as it came from the field, only somewhat dryer and riper than usual, and with the seed beaten off, and renders it thoroughly fit for breaking. Specimens, dyed red, blue, yellow, etc., are exhibited, to show how readily and satisfactorily the flax-cotton takes any colour that may be desired. Beside these lie rolls of flannels, feltings, and almost every variety of plain textures, fabricated wholly or in good part from flax as prepared for spinning under M. Claussen's patent, proving the adaptation of this fibre to almost every use now subserved by either cotton or wool. The mixtures of cotton and flax, flax-cotton and wool, are excellent and serviceable fabrics.

"The main question still remains to be considered—will it *pay?* Flax may be grown almost everywhere—two or three crops a year of it in some climates—three times the present annual product of cotton, flax, and wool, all combined, could easily be produced even next year. M. Claussen says, the flax-straw, or the ripe, dry plant as it comes from the field, with the seed taken off, may be grown even here for $10 per ton; but he will concede its cost for the present to be $15 per ton delivered, as it is necessary that liberal inducements should be given for its extensive cultivation. Six tons of the straw or flax in the bundle will yield one ton of dressed and clean fibre—the cost of dressing which by his methods, so as to make it flax-cotton, is $35 per ton. (Our superior Western machinery ought considerably to reduce this). The total cost of the flax-cotton, therefore, will be $125 per ton, or six cents per pound, while flax, as it comes from the field, is worth $15 per ton; should this come down to $10 per ton, the cost of the fibre will be reduced to $95 per ton, or less than five cents per pound. At that rate, good 'field-hands' must be rather slow of sale for cotton-planting at $1,000 each, or even $700.

"Is there any doubt that flax-straw may be profitably grown in the United States for $15 or even $10 per ton? Now the seed is morally certain to command, for two or three years at least, a higher price than hitherto, because of the increased growth and extended use of the fibre. Let no farmer who has flax growing be tempted to sell the seed by contract or otherwise, for the present; let none be given over to the tender mercies of oil-mills. We shall need all that is grown this year for sowing next spring, and it is morally certain to bear a high price even this fall. The sagacious should caution their less watchful neighbours on this point. I shall be disappointed if a bushel of flax-seed be not worth two bushels of wheat in most parts of our country next May.

"Our ensuing agricultural fairs, state and local, should be improved for the diffusion of knowledge and the attainment of concert and mutual understanding with regard to the flax culture."

Mr. Greeley goes on to state that the flax, roughly prepared by the partial separation of the straw by an inexpensive machine, and without steeping, "may be transported even a hundred miles to market at a moderate cost, and there can be no reasonable doubt of its commanding a good price. M. Claussen assures me that he could now buy and profitably use almost any quantity of such flax, if it were to be had. The only reason, he says, why there are not now any number of spindles and looms running on flax-cotton, is the want of the raw materials. His patent is hardly yet three months old.

"Of course there will be disappointments, mistakes, unforeseen difficulties, and disasters, in flax growing; but I believe the fullest inquiry, the most careful calculations, preliminary to any decisive action, will lead to very extensive flax-sowing next year—to the erection of flax-breaking machinery at a thousand points where none such have ever yet existed—and ultimately to the firm establishment of new and most important branches of industry. Our own country is better situated than any other to take the lead in the flax business; her abundance of cheap fertile soil, and of cheap seed, the intelligence of her producers, the general diffusion of water or steam power, and our present superiority in flax-breaking machinery, all point to this result. It will be unfortunate alike for our credit and our prosperity if we indolently or heedlessly suffer other nations to take the lead in it."

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ON THE

PARSONS LIBRARY University of MICHIGAN

COMPOSITION AND ŒCONOMY

OF THE

FLAX PLANT.

BY DR. HODGES, F.C.S.,
PROFESSOR OF AGRICULTURE, QUEEN'S COLLEGE, BELFAST, AND CHEMIST
TO THE CHEMICO-AGRICULTURAL SOCIETY.

[*From the* REPORT OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE *for* 1852.]

LONDON:
TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

On the Composition and Œconomy of the Flax Plant. By Dr. Hodges, *F.C.S., Professor of Agriculture, Queen's College, Belfast, and Chemist to the Chemico-Agricultural Society.*

Next in importance to the study of the substances which serve man for food, is the investigation of the composition and œconomy of the materials which yield him clothing. Among the plants which, from the most remote antiquity, have been valued for their textile adaptation, those of the Linaceæ family—and especially the *Linum usitatissimum*, a native of our own country, and widely spread over Europe, and also found in Hindostan and North America—have occupied a prominent place; the flax plant, we have reason to believe, having been cultivated for its fibre in the earliest seats of civilization, and manufactured in the tents of the patriarchal fathers of our race. We find that it was worn in the temples, and the microscope has demonstrated that it was entombed in the sepulchres of Egypt. It also appears that its valuable qualities were known to the ancient tribes of northern and western Europe.

A complete account of the flax plant, and its industrial applications in Ireland, should include—1st, the history of flax cultivation in Ireland; 2nd, an account of the processes of cultivation; 3rd, an examination of the chemical composition of the plant; 4th, an account of its technical preparation.

The second division of the subject, however, belongs so exclusively to the practical department of agriculture, that its consideration may at present be properly omitted; and though it would be out of place to occupy much time in this Section with the first division, yet a few remarks may be permitted, for the purpose of exhibiting the attention which, from a very remote period, seems to have been directed to flax cultivation in this country, and as illustrative of its vast importance to the inhabitants of the province in the commercial capital of which we are now assembled.

1. *The History of Flax Cultivation in Ireland.*—From the earliest periods, we have reason to believe that the inhabitants of this island were acquainted with the valuable qualities possessed by the fibre of the flax plant, and manufactured it for clothing. By whom, however, or from what country it was introduced, we have no satisfactory record; for the assertion made by some writers, that the Phœnicians were the instructors of the Irish people, is totally destitute of historical foundation. Our Irish name for flax is *Lhin*, which word is also applied to thread, while the term *Anairt*, which is used to express a kind of coarse linen cloth worn by the peasantry, Dr. O'Donovan, of Queen's College, whose extensive and valuable researches in connexion with the native records of this kingdom are so well known, informs me has no cognate term in any language with which he is acquainted, and is evidently a word of great antiquity. In the Brehon laws, also, we find it enjoined that the Brughaidhs or farmers must be acquainted with the mode of working flax. The linen shirt, dyed yellow, indeed, appears to have been a national dress; and the celebrated jesuit, Edmund Campion, speaking of the "meere" Irish, describes their fondness for capacious linen garments. "Linen shirts," he says, "the rich doe weare for wantonness and bravery, with wide hanging sleeves, playted; thirtie yards are little enough for one of them." The importance of flax cultivation in Ireland appears to have been fully recognized by the English government, as may be inferred from the number of legislative enactments and grants for its encouragement. In 1809, we find that government appropriated the sum of £20,000 for this purpose. The exertions of several national societies have also been directed to the promotion of flax

cultivation; and by the labours of the Royal Dublin Society, the parent of all our agricultural associations, important improvements were introduced in the management of this crop. Since the establishment, in 1841, of the Royal Flax Improvement Society of Ireland—an association of proprietors and manufacturers, which was originated, and holds its meetings in this town—there has been expended of money, collected by subscriptions from members, £8000, and of money granted by the government to the Society, for the promotion of flax cultivation in the south and west of Ireland, £4000. Yet, notwithstanding the efforts which have been made by governments and societies to stimulate the culture of flax, and though the total extent of the crop produced last year was estimated by the Census Commissioners as equal to 138,619 acres, the value of which would be about £1,700,000, this produce is only about a fourth of that annually required by the rapidly increasing manufactures of the United Kingdom. Though flax is at present cultivated in almost every part of Ireland, yet it is in Ulster that this branch of industry has attained its chief development. Of the 138,619 acres of flax grown in 1851, only 14,893 acres were beyond the bounds of this province. It is in Ulster, also, that the principal seats of its manufacture are to be found.

2. *The Composition of the Flax Plant.*—In reference to the third division of the subject, I conceive that the most satisfactory method will be to communicate the history of a crop grown by myself for experimental purposes, the progress of which I was able carefully to watch, from the sowing of the seed till its conversion into dressed flax for the market. Some of the details which I have collected, though of importance in the study of agricultural science, have not been hitherto much attended to in this country.

The field selected for the experiments was situated about a mile and a half from Belfast; it has a south-west aspect, and the soil is a sandy loam, composed of transported materials, such as are common in the districts surrounding Belfast. It had been occupied as a grazing field for four years, and allowed to produce rich crops of thistles and ragweeds. Its chemical examination proved that it contained a fair supply of all the ingredients required for the purposes of cultivation: 100 parts had the following composition:—

Organic matters	6·60
Oxide of iron	2·06
Alumina	2·00
Carbonate of lime	1·91
Sulphate of lime	1·01
Phosphate of lime	0·18
Carbonate of magnesia	0·06
Salts of potash and soda	2·40
Insoluble siliceous matters	83·32
	99·54
Water in the sample	3·00

Textural composition.—Clay, fine sand, and organic matters	16·50
Coarse sand and gravel	83·50
	100·00

Progress of the Crop.—On the 16th of April, 1851, a portion of the field, measuring exactly 70 yards by 70, which had been prepared by spade labour in winter, was reduced to a fine tilth by harrowing and rolling, and sown with two and a half bushels of clean Riga seed of superior quality. The weather had been dry for some time; but in the evening, after the sowing, 0·300 inches of rain fell.

On the 28th of April the young plants appeared above the soil.

Mean temperature, from 16th April, 46°·5 Fahr.
Quantity of rain .... 1·385 inch.

On the 14th of May the surface of the field was green; each plant consisted of two leaves.

May 31.—Each plant, with root, measured about 6 inches. Eight plants were taken for examination, and were found, when all traces of adherent earth were removed, to weigh 36 grs. They were dried at 212°, and carefully incinerated in a platinum vessel, and were found to be composed as follows:—

		Per-centage composition.	
		Fresh plants.	Dry.
Water	30·18	83·833	
Organic matters	5·09	14·139	87·446
Inorganic matters ..	0·73	2·028	12·554
	36·00	100·000	100·000

June 26.—Two plants, with roots, were taken from the same part of the field as those last examined. The plants were just about to flower. Height of each above surface of soil, 22½ inches. Both together weighed 60 grs.

	Per-centage composition.	
	Fresh plants.	Dry.
Water	81·917	
Organic matters	16·837	93·11
Inorganic matters......	1·246	6·89
	100·000	100·000

June 28.—The plants were in flower. Mean temperature, from their first appearance above the soil (60 days), 53°·7 Fahr.

July 7.—One plant in flower was taken. Height, 29 inches. Weight of entire plant, 26·05 grs.

	Per-centage composition.	
	Fresh plants.	Dry.
Water.................	73·321	
Organic matters........	25·144	94·25
Inorganic matters	1·535	5·25
	100·000	100·000

July 28.—One plant of flax, in seed, was taken; height above ground, 31 inches, root 5½ long; length from surface of the field to the first branch 24 inches. About 5 inches of the lower end of stem had become yellow. The weight of the entire plant was 71·1 grs.

	Per-centage composition.	
	Fresh plant.	Dry.
Water..............	69·210	
Organic matters........	30·045	97·58
Inorganic matters	0·745	2·42
	100·000	100·00

The plant was cut into three portions, which were separately incinerated, with the following results:—

1. Root and lower part of stem weighed, dried, 6·60 grs., gave 0·094 ash, 1·424 per cent.

2. Capsules and branches, dry, weighed 9·47, gave ·293 ash, 3·094 per cent.

3. Middle portion, dry, weighed 5·53, gave ·143 ash, 2·584 per cent.

August 10.—One plant taken; entire length, with root, 37 inches; length from surface of soil to branches, 29 inches; stem of a light straw colour; leaves withered on 10 inches of stem; capsules 10 in number—seeds green; weight of entire plant 71 grs.; branches and capsules 31·8 grs.; water in plant 45·336 grs.; solid matter in ditto 25·665 grs.; inorganic matter in ditto 1·006 gr.

Per-centage Composition.

Water	63·852	
Organic matters	34·732	96·08
Ash	1·416	3·92
Total..	100·000	100·00

August 25.—The pulling of the crop was begun—a plant was taken and examined; weight of entire plant 62·40 grs.; weight of capsules 22·50 grs.

Per-centage Composition of Stem.

	In fresh plant.	Dry.
Water	56·64	
Organic matters	41·97	96·80
Ash	1·39	3·20
Total..	100·00	100·00

The crop was placed in stooks, and remained in the field until the 8th of September, when it was weighed at the Cregagh Steeping Works. At this period the air-dried straw was found to contain 12·2 per cent. of water, and the bolls 11·84 per cent.

The weight of the produce of the experimental field (straw and bolls), air-dried, was 7770 lbs., for which the sum of £12. 2s. 9d. was obtained.

Amount of Nitrogen and Inorganic Matters in the Straw and Capsules, as pulled on the 25th August, dried at 212°.

	In the straw.	In the bolls.
1. Nitrogen, per cent.	0·53	1·26
2. Ash, per cent.	3·20	4·77

Composition of the Inorganic Matter of the Crop.

100 parts of the ash of the straw and capsules had respectively the following composition:—

	Ash of straw.	Ash of capsules.
Potash	20·32	16·38
Soda	2·07	6·25
Chloride of sodium	9·27	12·98
Lime	19·88	13·95
Magnesia	4·05	3·91
Oxide of iron	2·83	0·38
Sulphuric acid	7·13	14·51
Phosphoric acid	10·24	23·26
Carbonic acid	10·72	6·37
Silica	12·80	0·67
Total..	99·31	99·02

One of the earliest among those who directed their attention to the chemical composition of flax, was a distinguished member of this Association, Sir Robert Kane. Since that time analyses of the ash of the straw of flax have been published by Professor Johnston of Durham; by Messrs. Mayer and Brazier, and by Mr. Way in England; by Leuchtweiss in Germany; and by the reporter. The only examination however of the proximate constituents of the plant, so far as I am aware, consists of an analysis of the seed by Leo Mayer. It is, indeed, strange that a plant, the straw of which has afforded occupation to the industry of so large a portion of the world in all ages, and the preparation of which, for commercial purposes, consists in acting upon its proximate constituents, should not have been more carefully studied. Having been for some time engaged with investigations in this important department, I shall, on some other occasion, bring forward the details of my analyses. At present I shall merely state the general results of the examination of a specimen of flax-straw taken from the experimental crop. A preliminary examination having indicated the presence of a volatile oil, a quantity of the stems of the plant, carefully deprived of the seed capsules, was distilled with water containing common salt, and from the distillate, which was without action on litmus, I obtained an oil of a yellow colour; 5 lbs. of the fully-grown fresh stems afforded about 10 grs. of this oil, which had an agreeable penetrating odour, and suggested the peculiar smell which is remarked on entering a room where flax is stored. In my examination of the proximate constituents of the plant, the straw, coarsely powdered, was placed in an extraction apparatus, and successively treated with æther, absolute alcohol, water, dilute hydrochloric acid, and weak solution of potash. The solutions obtained on examination were found to contain a fat oil, wax, traces of chlorophyle, a peculiar green resin, a gum resin, which presented some of the characters of the principle which Pagenstecher termed linine, and described as existing in the *Linum catharticum* or "purging flax," but could not be identified with it, a modification of tannic acid, which afforded a gray precipitate with perchloride of iron, but was not affected by solutions of isinglass or tartar emetic, gum, not affected by solution of borax or basic silicate of potash, a brown colouring matter, albumen, caseine, starch, pectine, cellulose, and salts. The following table exhibits the action of the various solvents employed:—

1. Soluble in æther	2·83
2. Soluble in absolute alcohol	3·52
3. Soluble in water	5·92
4. In dilute hydrochloric acid	22·76
5. In dilute solution of caustic potash	16·39
6. Cellulose and salts	48·58
	100·00

I shall now proceed to the fourth division of the subject, and describe the various methods which are adopted for the purpose of preparing the flax plant for the spinner. I shall not in this place allude to the œconomy of its seed, but confine myself to the management of the fibre of the plant, to obtain which, of superior quality, is the main object of the flax-growers of Ulster.

When a portion of the straw, as it is termed, of the flax plant is examined, it is found to consist of three parts: first, of a woody, central, hollow column, which the microscope shows to be composed of cellular tissue; second, of a tubular sheath, composed of long and firm bast-cells; and thirdly, of a delicate covering of epidermis. By rubbing a piece of dried flax-straw between the fingers, the woody central part and delicate epidermis can be readily broken to pieces, while the tough fibres of the bast-cells will be found to remain but little injured. Those tough fibres, which are capable of being split into filaments of extreme delicacy, constitute the raw material of our greatest national manufacture. In the country farm-houses and manufacturing towns of Ulster, they afford employment to thousands of our people, and are made to assume almost innumerable forms. They are moulded into the costly lace and beautiful cambric. They cover our tables, and supply us with "fine linen," equal to that which was once the pride of Egypt. The coarser fibres give stout sails to our ships, and even the refuse rejected by the spinner is worked up into a cheap and substantial material for covering our farm-houses, while the sweepings of the Belfast warehouses are sold to the paper-makers of England, and used to produce the broad sheets upon which the *Times* and *Morning Chronicle* newspapers are printed.

To separate this invaluable fibre from the worthless parts connected with it is the first step in its preparation for the spinner. Numerous plans have been proposed for this purpose, both by scientific and practical men. The examination of the plant shows us that its parts are bound together by gummy and resinous substances, and that vegetable jelly fills its cells. The separation of the fibre, therefore, merely by mechanical means, as might be expected, cannot be perfectly accomplished; yet at various times patents have been taken out for the application of machinery for this purpose; and in 1815 the Linen Board expended £6000 in the attempt to introduce into Ireland a machine which had been invented by a Mr. Lee. One of those machines was lately sold as lumber at the White Linen Hall in this town. In other countries the dry preparation has also been tried, and though it has been found capable of producing a coarse, discoloured fibre, adapted for inferior fabrics, such as bagging, &c., yet it has been nearly discontinued. The specimens on the table will serve to illustrate the results of this method of treatment, as pursued in the jail at Cork, where it serves to give useful employment to the prisoners.

From the earliest times only one method has been found capable of yielding the textile material in a condition adapted for every purpose, and possessing all the qualities demanded by the spinner, viz. the decomposition, by the process of fermentation, of the adhesive substances which connect together the bast fibres and the ligneous tissues of the straw. It is by this process, variously modified in the arrangements for conducting it, that nearly all the fibre produced in the great flax-growing countries of Europe is at present prepared. In many parts of Germany the fermentation is induced by exposing the flax, spread in the fields, to the influence of the air and moisture; while in Belgium, which is justly regarded as the model country for flax management, the practice of enclosing the straw in wooden frames, and immersing it in the waters of rivers until the necessary changes are produced, is in many places adopted and found to yield fibre of superior quality.

In Ireland, at the present time, two modifications of the system of fermentation are in use—one of which consists in steeping the straw in pools of water in the open air at ordinary temperatures, while, according to the other method, the steeping is transferred from the farm to the factory, and the fermentation accelerated by employing water maintained at an elevated temperature. The former method of steeping has prevailed in this country and in other parts of Europe to some extent from the earliest times; and though it has been asserted by some writers, without, however, any authority for the statement, that the ancient inhabitants of this island prepared the flax in the same rude manner, by beating the unsteeped straw, as observed among some of the people of the South Sea Islands, yet we may, I think, infer from the number of places to which the name "*poll a lin*," *i. e.* flax hole, is applied, that they steeped in water. The plan followed by the farmer, who adopts the plan of steeping the flax on his farm in the open air, is to excavate a pond in connection with some convenient stream. The dimensions preferred are from twelve to eighteen feet broad, and about four feet deep. The quality of the water employed requires careful consideration, hard waters being found materially to interfere with the process; ferruginous waters also are avoided; and in those districts where the steeper is obliged to make use of them, the flax acquires a dark tinge, which the bleacher finds it difficult to remove. From the action of the salts of iron upon the modification of tannic acid, which I have shown to exist in the straw, we can readily understand that the presence of iron in the water of the steep-hole must be prejudicial. As the oozing of water from the adjoining soil also frequently produces discoloration of the flax, careful steepers place on each side of the pond a small drain, to prevent the entrance of drainage waters. The flax, after pulling, is prepared for steeping by removing the seed capsules, or bolls, by means of a simple machine, composed of a number of iron teeth, about eighteen inches long, screwed to a socket of wood, and fixed perpendicularly on a long bench, upon which the workmen sit. The bolls are separated from the stems by the workmen taking a handful of the flax, spreading it out, and drawing it through the teeth of the ripple, as the machine is termed. Sometimes, however, the steeping does not take place until the flax has been stored for some time, and has become so dry that the fibre would be liable to injury by using the common rippling-machine. In such cases the seed is beaten off by means of a "beater," formed of a block of wood furnished with a curved handle.

In England, where the flax plant is cultivated more for supplying food for cattle than for its fibre, the value of its nutritious seed is acknowledged by every farmer; but in Ireland, unfortunately, industrial knowledge is only beginning to influence the practice of the agricultural population. It is in Ulster that the chief progress has been made. The Royal Flax Society has diffused much useful information; and another institution, the Chemico-Agricultural Society, by its lectures and publications, has also contributed, in no small degree, to overcome ancient prejudices. Yet it must, I fear, be regarded by this meeting as but little creditable to our agriculture, that, though annually nearly 650,000 qrs. of flax-seed and 70,000 tons of flax-seed cake are purchased by the farmers of the United Kingdom from foreign countries, only about one-tenth of the seed grown in this country is saved, the remaining portion, by the prejudices or indolence of the farmer, being consigned to the steep-hole.

In placing the bundles of flax in the steeping-pond, they are arranged in regular rows, placed in an inclined position, so that the tie which confines the straw in one bundle rests upon the root end of the preceding bundle; the bundles of flax of equal length being arranged in different parts of the pond. When the pond is filled, a thin layer of straw or rushes is spread evenly over the flax, and on this covering old sods are placed, so as to keep the bundles from rising above the water. In a day or two, according to the temperature of the season, fermentation commences in the pool, and in warm weather in from eight to ten days, at other times in from twelve to fourteen, the steeping and retting, as the process is usually termed, is completed. During the steeping the water acquires a dark brown colour, carbonic acid is disengaged in great abundance, and the surface becomes covered with a gelatinous scum. To remove this matter it is usual to allow a gentle current of water to flow over the surface of the pond from the supplying stream, as, when it is allowed to remain, the colour of the flax is found to be injured. Various methods are resorted to in this and other flax-growing countries, to ascertain the proper period for the removal of the flax from the pond. Thus the Silesian steepers take some stalks of the flax from the pits, and place them on the surface of the water. If the stalks sink they remove the flax, but if they swim they allow the steeping to continue for some days longer; while the Irish farmer, day after day, when the fermentation has fairly commenced, anxiously tests the progress of decomposition by drawing a few stalks from one of the flax bundles and breaking them across in two places, about two inches apart. If he can readily pull away the central woody column without tearing the filaments of bast which surround it, he considers that the period has arrived for removing it from the pit.

It is easy to perceive that the peculiar series of changes which facilitate the breaking up of the various organic compounds which compose the structure of the flax plant, must, in our fickle climate, where so many sudden alterations of temperature occur, be liable to frequent disturbance, and that the progress of the fermentation, in the shallow steeping-pools, must be exceedingly irregular and uncertain. It is not, indeed, to be wondered, that, notwithstanding the closest supervision, the most experienced steepers should frequently be deceived, and that one part of the flax should be too much decomposed while another part has not properly experienced the alterations which facilitate the complete separation of the valuable material.

The disagreeable odour evolved from a flax-pool must be familiar to those who have travelled in the north of Ireland in the steeping season, and the black hue which the streams in some country districts acquire at that period, from the refuse waters of the pools being allowed to fall into them, excites the surprise of strangers.

It is interesting to discover, amongst those wonderful records, not merely of the military achievements, but of the rural occupations and manufactures of the ancient inhabitants of Egypt, which have come down to us on the walls of their temples, that the steeping of flax and its preparation for their "fine linen," was conducted nearly, we may conclude, in the same manner as by our farmers at the present time. The drawings exhibit to us large wooden vats for containing the flax-straw, and men are represented carrying water to fill them.

To render the history of the crop complete, it is necessary to give some account of the treatment which the flax undergoes on its removal from the steeping-pool. I shall confine myself to a description of the ordinary system of this country. The first operation to which it is subjected is what is technically termed *grassing*, which consists in spreading the steeped straw in thin and even layers upon pasture ground, for from six to ten days, according to the season, frequently turning it during its exposure, that the air may act equally on every part of it. By *grassing* the eremacausis of the woody matter and loosening of the fibre is still further promoted, and the colour of the flax also improved. After grassing, the straw is either stored up in stacks, for subsequent treatment, or at once subjected to the action of machines which break up and remove the brittle woody parts. To break up the woody matters so as to facilitate their removal in the ordinary practice of the farm, a simple machine, termed "the break," is employed. It consists of two wooden frames, each of which is furnished on one side with a number of parallel angular bars, so arranged, that, when the frames are connected together by a hinge, the angular surfaces of the bars on one frame are received into the hollows formed between the bars of the other. One of the frames is permanently fixed on a support, while motion is communicated to the other frame by means either of an iron spring, or by an elastic pole of wood attached to it and connected with a treadle, upon which the workman presses with his foot. By placing a handful of the straws between the frames, and pressing upon the treadle, the moveable frame descends and bruises, or breaks the inelastic woody matter, while the supple fibre is uninjured. So prepared, the straw is ready for the second and final operation, which it undergoes before it is transferred from the farm to the factory. Steeping and grassing have destroyed the cohesion between the various structures of the straw, the break has fractured the woody matters, it only now remains to liberate completely the valuable textile material from its worthless encumbrance. This is effected on the farm by means of a simple implement of manual labour; an improved form has been introduced from Belgium. It consists of a thin blade of wood, attached to a handle, and an upright wooden stand, with a notch cut on one side, in which the workman inserts a handful of the steeped and bruised flax, and turning the flax so as to present every part to the implement, by the blows of the "scutcher" the brittle and broken woody matters, technically termed "shoves," are knocked away, and at the same time any very short or injured fibres are removed, producing what is known as "scutching tow." Sometimes bits of "shove" adhere so closely to the bast fibre, that the workman requires to scrape them away by means of a blunt knife.

Amongst the various obstacles which impede the extension of flax cultivation to the south and west of Ireland, is the difficulty of obtaining experienced scutchers; and serious loss has frequently been sustained, by persons who have attempted the preparation of the crop, from the want of that skilled labour which is available in almost every part of Ulster. Thus it was found that while the northern scutchers can turn out from 12lbs. to 14lbs. of fibre per day, the workmen in the south and west have not been able to prepare more than from 5lbs. to 6lbs. daily, and frequently not more than 2lbs. It is therefore of great importance to this country that government is about to afford encouragement to the erection of machinery for scutching, in districts where skilled workmen cannot be obtained. Even in Ulster, for some years the opinion has begun to prevail, that, as in other departments of our manufactures, hand labour must, in the preparation of the flax fibre, give place to machinery, and "scutch-mills," where the work is performed for the farmer, are to be found in all our flax-growing districts.

The fibre of the flax, prepared either by manual labour, or in the scutch-mill, is ready for market, and is sold according to its quality, at prices ranging from £30 to £150 per ton. It is not yet, however, suitable for the operations of the spinner. In the same bundle there exist fibres of various qualities; and it is also necessary that the filaments should be arranged in parallel "*reeds*." They must be sorted and hackled. "Hackling" consists in drawing the mass of fibres through sets of iron teeth, fixed in a stand of wood, which, like the teeth of a comb, separate and arrange the fibres, and remove all broken pieces. Thus treated, flax is rendered fit for its various textile uses.

Produce of Fibre, &c.—The amount of rippled flax-straw, viz. 5824lbs., obtained in my experiment, considerably exceeded the ordinary produce of the farmer. From the returns of the Royal Flax Society, and from my own inquiries, I would estimate the average produce of a statute acre, in the north of Ireland, of air-dried flax-straw, with bolls, at two tons, which by the seeding machine are usually reduced to 3360lbs. By the various processes of the rural manufacturer, the amount of dressed flax or fibre obtained averages from four to five cwt. per acre. Some time ago I made an experiment at one of the country scutch-mills near Belfast, for the purpose of ascertaining the relative proportions of the various qualities of fibre, and also the distribution of the inorganic matters. The flax employed had been steeped in the usual way, and was found to contain 1·73 per cent. of inorganic matters:—

4000 lbs. of air-dried straw produced of—

Dressed flax	500 lbs.
Fine tow	132 lbs.
Coarse tow	192 lbs.
	824 lbs.

An examination of the amount of ash which the above materials respectively contained, showed that its distribution was as follows:—

In the flax	4·48 lbs. of inorganic matters.
In the fine tow	2·08
In the coarse tow	2·56, or in all 9·12 lbs.

So that 59·08 lbs. of the inorganic matters, which the crop had withdrawn from the field, remained locked up in the woody shoves, which, as obstinately resisting decomposition, are used for fuel, while 9·12 lbs. were carried away in the dressed flax and tow sold to the spinner.

Accelerated Fermentation—The Patent System.—For so far, we have considered the preparation of the flax fibre solely as constituting a part of the ordinary farm operations of this country. Where the necessary amount of intelligence prevails among the agricultural community, with regard to the proper cultivation of the crop and its after treatment, as is the case in Belgium, in some provinces of which country frequently 10 per cent. of the cultivated area is devoted to its production, and in Ulster, where we find that, in 1851, one out of every 44 acres was under flax, experience has taught the farmer, that even with the various disadvantages attendant upon the old and uncertain methods of management, it is capable of yielding considerable profit to the grower. Notwithstanding, however, the efforts which have been made by societies and government to extend the cultivation of the crop to those districts in the south and west of the kingdom, where, for various reasons, it was most important that the means of occupation which it was found to afford in Ulster should be rendered available, great difficulties were experienced, both from the deficiency of skilled labour and the want of convenient markets for the produce. Fortunately, at a time when great discouragements had been experienced by those who had entertained the expectation that the fertile soils of the south of Ireland were destined to render our manufacturers independent of the supplies of foreign countries, the attention of the flax-growers of Ulster was directed to a system of flax management, proposed by an American named Schenck, which appeared to remove all the difficulties of the old system, and promised completely to revolutionize the œconomy of the crop. In the method of Mr. Schenck, as in the old system, a process of fermentation is employed for the separation of the fibre; but instead of the steeping being conducted in the open air in shallow pools, it is made a factory operation, and the requisite changes are accelerated by placing the rippled flax in water maintained at an elevated temperature. This method is not new, but had been proposed by Professor Scheidweiler in Belgium, and tried in this country several years before the arrival of Mr. Schenck. It also appears to have been employed by the Malays and the natives of Bengal; but it is to the late

Mr. Schenck, and his successors, Messrs. Bernard and Koch, that the credit of organizing establishments for working the process is to be ascribed.

The advantages which the new system presented were most important:—

1st. By leading to the establishment of factories for the steeping of flax, and the purchase of the crop from the farmer, who would thus be relieved from the trouble of its preparation, it rendered it possible to extend the cultivation of the crop beyond the bounds of the ordinary flax-growing districts.

2nd. It introduced greater certainty and œconomy into the preparation of the fibre.

3rd. It prevented the destruction of the valuable seed, and also increased the per-centage of fibre. With these advantages, as might be expected, the new system made rapid progress, and establishments were erected, not merely in Ireland, but in England and Scotland, and the attention of several Continental countries was also at once directed to it.

To enable you completely to understand the system of management pursued at these establishments, one of which those interested in the subject will have an opportunity of inspecting in the neighbourhood of Belfast, I shall continue the description of the treatment of the experimental crop, of which I have already given a portion of the history. When the crop had been completely air-dried, by exposure in the field, so as to yield, as already stated, in the straw, when dried at 212°, only 12 per cent. of water, it was removed to the steeping-works at Cregagh. It was there placed in stacks, and after some time prepared for steeping. The first operation for this purpose is the removal of the valuable bolls or capsules. This, in these establishments, where the cost of labour is carefully considered, is usually most expeditiously and perfectly effected by means of a machine composed of two massive cast-iron rollers, to which motion is communicated by a belt from the steam-engine. Between these the flax is passed and the capsules bruised, so that the seed can be readily shaken out. Having been deprived of its bolls by this machine, it was found that the 7770 lbs. of flax plants were reduced to 52 cwt., or 5824 lbs.

Of the portions of the plant removed by the seeding machine, 910 lbs. consisted of clean seed, 1036 lbs. of husks, leaves, and sand. The vats to which the flax is now removed are formed of wood, strongly bound together by hoops, the oval shape being preferred. They are furnished with false bottoms, pierced with holes beneath, through which, by means of a coil of pipe, as represented in the drawing, steam is conveyed. The flax having been placed in the vats, with the bundles resting on the butt or root ends, and in single layers, as in the ordinary steeping-pools, a wooden frame is fixed above them, so as to prevent their rising out of the water during the fermentation. The vats are now filled with water, so as completely to cover the flax, and the steam-cock opened so as gradually to raise the temperature to 90° F. The overseers are furnished with thermometers, and instructed carefully to maintain the temperature at that point day and night. Reckoning from the time at which the steam is admitted to the vats, the duration of the steeping averages about sixty-six hours. When the object is to obtain a very fine fibre, the retting is continued for a longer period. The method of ascertaining the proper period for the removal of the flax from the water is the same as has already been described as relied on by the common steeper. The loss experienced by the seeded flax in steeping was 13 cwt.

Drying.—When the steeping is completed, the flax is carried from the vats to an adjoining apartment of the factory, and placed in layers upon tables, and fixed by women in the drying holders. These consist of two wooden rods, 5¾ feet long, between which a thin layer of flax is secured, by passing metal rings over the ends of the holders, fifty holders being employed for about 1 cwt. of flax. Thus secured, the holders are carried to open drying sheds, and suspended from cross-beams. In three days, in favourable weather, the drying is completed; but in damp weather it is placed in a hot chamber, to heat which the waste steam of the steam-engine is employed.

Breaking and Scutching.—As in the patent steeping establishments a sufficient number of skilled workmen could not be at all times obtained, a new impulse was given to the invention of machines capable of performing the work of the hand-scutcher, and several ingenious and beautiful mechanical arrangements have been proposed, both for breaking and scutching the flax. In this department Belfast has produced some excellent examples, and the machines of Messrs. M'Adam, Brothers and Co., and of Mr. Richard Robinson, are to be found in almost every flax-growing district both in this country and in England. From the 52 cwt. of seeded straw, the produce of the experimental crop, there remained 6 cwt. 1 qr. 2 lbs. of marketable fibre.

After the introduction of the new system, and that several establishments were occupied in the preparation of fibre, objections were made to the quality of the material, and considerable doubts were expressed, both with regard to the amount of produce obtained, and its adaptation for its various uses. These objections, however, were at the time removed by experiments instituted by experienced manufacturers, both in this country and at the admirably-conducted works of the Messrs. Marshall in Yorkshire. In Messrs. Marshall's experiments, samples of the products of which are on the table, flax-straw grown in Holland was the material employed; the steeping of a portion was conducted at two establishments, on Schenck's system, while another portion from the same lot was steeped in Holland in the ordinary way. The results were regarded as in all respects confirmatory of the superiority of the patent process; and a Committee of the Royal Flax Society also reported, that all objections with respect to any injurious influence of the accelerate fermentation on the strength and bleaching qualities of the fibre had been shown to be groundless, and that the yield of the fibre was greater than when "the old, slovenly, and uncertain process of watering" was practised.

The process of fermentation, as conducted in the patent establishments, so far as my investigations have extended, does not appear in any respect to present phænomena different from what I have observed in the ordinary steeping-pools of the country, when only rippled flax is employed. Usually, in eight or ten hours after the flax had been placed in the vats, a copious extrication of gas is observed, and sometimes the vat becomes covered with a head of froth, like the vat of the brewer; and at this period an odour is evolved in the establishment closely resembling that of the brewery. The gas evolved at this period is chiefly carbonic acid. The liquid at the same time exhibits a slight acid reaction. As the process continues the temperature rises, so that an additional admission of steam is seldom required to maintain the liquid at from 85 to 90 degrees. Towards the conclusion of the operation, usually in about 60 hours, the escape of gas becomes less abundant, and a covering of slimy matter collects on the surface of the liquid.

The steep-water at this period has a light brown colour, is transparent, and closely resembling bitter ale. It is strongly acid to litmus, but the original blue colour of the test-paper is restored on drying.

Its taste at first is rather agreeably acid, but followed by the peculiar plant-like taste of the flax. Contrary to what has been stated in some reports on this subject, the liquid I found, at the conclusion of the process, yields nearly a trace of acetic acid, and in numerous experiments no trace of the evolution of sulphuretted hydrogen could be detected at any stage of the fermentation. When the flax is allowed to remain in the vats after the usual time, a new series of changes, and a fresh and rapid extrication of gas, take place. I have made, during the last three years, numerous experiments with respect to the composition of the steep-water from several establishments, and also from the common steep-pools, which afforded me some interesting results, and satisfied me that the fermentation which is induced by steeping flax in water resembles the so-called butyric acid fermentation, merely traces of acetic acid, and invariably large quantities of butyric acid, having been detected in every case. In fact, the fragrant butyric æther, so extensively employed in the preparation of pine-apple rum, and in flavouring confectionery, might readily be obtained in large quantities from the stinking waters of the flax-pool.

Œconomy of the Flax Water.—With regard to the refuse waters of the vats, some years ago, upon the opening of Mr. Schenck's establishment in Belfast, I made an analysis of the water in which the flax had been steeped, which confirmed the conclusions to which I had been conducted, from my examinations of the waters of the country steep-ponds, that an opinion which had been promulgated by scientific authority, of the possibility of restoring to the fields of the farmer all the ingredients abstracted from the soil during the growth of the flax, by means of the steep-water and other refuse parts of the plant, was not, even supposing that these matters could be œconomically employed as manure, which is impossible, supported by investigations with respect to the amount of fertilizing ingredients which they contained.

Chemistry is, I conceive, contributing in no small degree to the progress of agricultural knowledge. It has even already introduced greater œconomy into many departments of the farmer's business, and has opened up to him new sources of fertilizing agents. But in some cases it is to be feared that the chemist has himself raised obstacles to the reception of agricultural science by the practical agriculturist, by proposals which, though capable of being carried out in the laboratory, are totally inapplicable in the great operations of the husbandman.

To ascertain exactly the effect produced by steeping, and the composition of the steep-water, I obtained from the works at Cregagh a sample of flax-straw unsteeped, a portion of steeped straw taken from the same lot, and a gallon of the steep-water taken from the vat immediately after the removal of the flax. The composition of the ash obtained by burning the extract of the steep-water, and the samples of the straw, is given in the Table. The spring-water employed at the works is moderately hard, indicating, on Dr. Clarke's scale, 8 degrees. It was not considered necessary to deduct the ingredients supplied in it, as these would add but little to its fertilizing value. An imperial gallon of the liquid of the vat was found to contain, in grains and tenths,—

Organic matters	136·7
Inorganic matters	131·4
Total solid matters	268·1

Composition of the Ash of the Flax-straw before and after steeping, and of the Inorganic Matters of the Steep-water.

100 parts of each respectively contained—

	Unsteeped flax.	Steeped flax.	Ash of the steep water.
Potash	13·88	11·40	19·31
Soda	5·33	4·17	...
Chloride of potassium	...	...	3·83
Chloride of sodium	6·47	3·28	21·24
Lime	18·86	17·69	8·23
Magnesia	4·10	5·50	10·18
Oxide of iron	5·40	5·76	2·02
Sulphuric acid	11·16	4·07	6·10
Phosphoric acid	9·63	11·87	3·77
Carbonic acid	10·37	20·06	23·30
Silica	15·23	15·78	1·12
Sand	...	...	0·60
	100·43	99·58	99·77
Ash per cent. in the straw	3·89	2·59	...

100 grs. of the dried extract of the steep-water contained 1·56 nitrogen, =1·89 grs. of ammonia; therefore an imperial gallon would be capable of supplying 5 grs.; and a vat containing 3000 gallons of water, $2\frac{1}{16}$ lbs., worth about 1*s.* 2*d.*, and would convey to the fields of the farmer about the same weight of phosphoric acid.

By the kindness of the proprietors of the Patent Steeping-Works at Cregagh, who have liberally given me an opportunity of inspecting the books of their establishment, I am enabled to give the following average statement of the changes which 100 tons of flax undergo, when treated by Schenck's process. 100 tons of air-dried flax-straw yield—

	Tons.
1. *By Seeding*—33 tons of seed and husks, leaving of seeded flax	67
2. *By Steeping*—67 tons of seeded flax yield of steeped straw	39·5
3. *By Scutching*—39½ tons of steeped straw yield of dressed flax	5·90
Of tow and pluckings	1·47

Flax Cotton.—The irregularity in the supply of cotton, the raw material of an important allied branch of English manufacture, and of which it is calculated the mills of the United Kingdom require annually a quantity equal to 1000 tons daily, has at various times suggested attempts to convert our indigenous flax into a form which might render it capable of being spun with the ordinary cotton machinery. It appears that attempts to produce from flax a substance possessing the properties of cotton, were many years ago made by a Swede named Des Charmes, and that in 1775 Lady Moira communicated to the Society of Arts some experiments which, suggested by those of the Swede, she had made in this country. Her ladyship's experiments are to us peculiarly interesting, as her letters show that they were carried on at her seat, the present residence of David Ker, Esq., M.P., only twelve miles distant from Belfast. Neither Des Charmes' nor Lady Moira's experiments seem to have led to any practical application of the proposed substitute for the foreign material; and though subsequent trials for the same purpose were made by various persons, the public do not appear to have placed any confidence in their plans. Lately, however, the project has been revived by a Brazilian gentleman, the Chevalier Claussen, known to the public as the inventor of an ingenious loom. This gentleman has been more successful than his predecessors in exciting attention, and his processes have been described by several chemists of reputation in England, as affording a new and beautiful application of the powers of chemistry to practical purposes. In every part of Europe, indeed, much interest has been excited by the accounts which have been published respecting his discoveries, which were regarded as calculated to render Great Britain nearly altogether independent of foreign supplies of cotton. The proposals of M. Claussen were not confined to cottonizing flax, but also embraced a method of preparing long-line or fibre for the flax-spinner, substituting for fermentation the more rapid action of a weak solution of caustic soda, followed by boiling, or simple immersion in water, acidulated with sulphuric or muriatic acid. The material employed for the production of his cotton was at first unsteeped flax-straw; but at present I find that the flax in its original state is not used, and that the refuse tow of the scutch-mills is preferred. This limitation of the application of M. Claussen's patent removes some of the objections which were urged against his original proposal to cut up valuable flax, so as to produce what the opponents of the invention regarded as an inferior article; now, however, it is merely the waste tow of the scutching-mill, which can be purchased at from £4 to £7 per ton, that is used in M. Claussen's establishments: and from this, as the interesting series of samples which have been kindly supplied to me by Dr. Ryan show, a beautiful material, capable, it is stated, not merely of being spun with cotton machinery, but of being combined with wool, silk, and other fibres, and exhibiting, apparently, that increased affinity for colouring matters which Mr. Mercer has found to be possessed by cotton fibre, acted upon by caustic alkali, has been obtained. The first operation at M. Claussen's works is to pass the tow through a carding and hackling machine, for the purpose of arranging its fibres parallel; so straightened, it is cut by another machine (somewhat similar in its operations to the chaff-cutter of the farmer) into pieces of about one and a half inch in length, and is then conveyed to the steeping vats. The vats are placed side by side; and by means of a cradle and a travelling railway, the tow can be transferred from one to the other, as required. It is, in the first place, steeped for twenty-four hours in a cold solution of caustic soda, of 1° Twaddel. The next step is to plunge it in another vat containing a similar solution, but furnished with a steam-pipe, so that the liquid can be kept at a boiling temperature for two hours. The peculiar part of the process, or the Claussenizing of the tow, is commenced by transferring the material prepared, as described, to a third vat, which holds a solution containing 5 per cent. carbonate of soda. It is allowed to remain immersed about an hour, so as to be completely saturated with this liquid, and is then raised from the vat and placed in a solution containing about one-half per cent. of sulphuric acid. In the bath of sulphuric acid it is alleged that important chemical and mechanical changes are effected in the character of the flax fibre. It is stated that it becomes at once changed, as if "by a new instance of natural magic," from a damp aggregation of flax to a light expansive mass of cottony texture, increasing in size, like leavening dough or an expanding sponge; and this material, it is asserted, can be produced at a cost not exceeding 2½*d.* per lb., which is considerably below the price at which cotton can be grown and imported from the United States or any other cotton-producing country. By a simple process of bleaching, and subsequently "carding," the tow thus modified assumes both the texture and appearance of foreign cotton, and can at once be employed by the cotton-spinner.

With such alleged advantages to recommend it, it was not wonderful that M. Claussen's proposal attracted the attention and excited the sympathies of Mr. Porter and other eminent œconomists, and that the late Lord Lieutenant of Ireland, the Earl of Clarendon, should desire that a scheme which promised such important results to this country, so deeply interested in the production of flax, should be carefully tested on a proper commercial scale.

An inquiry having been committed to Sir Robert Kane, Director of the Museum of Œconomic Geology, I was requested, together with Professors Blyth and Murphy of Cork, to make such investigations as might properly ascertain the value of the various methods proposed. But, unfortunately, the mechanical arrangements which had been made by M. Claussen's agents, to illustrate the production of the new material from unsteeped flax, were not capable of affording satisfactory results; and, though some trials with tow proved more successful, it was found impossible to carry out the object of the inquiry at the locality selected. I am informed that it is the intention of the patentees to solicit a full investigation of the methods pursued in their operations at works which they have established near London, and where, they state, the material is produced in large quantities. The real value however of Claussen's substitute for cotton must be decided by the experience of the manufacturers of England. With regard to the œconomy of the processes, it would be improper to give an opinion until the investigation which M. Claussen solicits has taken place. The specimens show what can be made from the waste tow of the spinner; and it is interesting to find both Berthollet and Gay-Lussac, many years ago, pointing out the advantages which appear here to be realized from the conversion of tow into a substitute for cotton.

I have now to request attention to a new process, entirely different from any of those which have been described, and the first public announcement of which I am permitted by the patentees to make to this meeting. The methods adopted are the invention of Mr. Watt, a countryman and namesake of the great philosopher. In this process neither fermentation nor the action of acid nor alkaline solutions are employed, the separation of the fibre from the useless matters of the straw being effected by subjecting the stems to the action of steam, and afterwards by pressure applied by powerful rollers. In the first place, Mr. Watt proposes to take seeded flax, and to expose it to steam, at the ordinary pressure of the atmosphere, in a close chamber, of peculiar construction, so as to soften and dissolve out the gummy and other soluble matters. The chambers which he employs are square vessels constructed of wood, or of plates of cast iron, and provided with false bottoms, formed of the perforated iron plates used in malt-kilns. Two doors are placed in the ends of the chambers, for putting in and removing the flax. The top of each vat is formed of cast-iron plates so arranged as to constitute a shallow tank for containing water, and through which, extending for some inches above the surface of the water, passes an iron pipe, which communicates with the interior of the chamber. To the opening of this pipe a valve is fixed, which can be opened or closed as required. Resting upon the false bottom, there is an arrangement of pipes, which are intended to act like the vomiter, or throw-pipe of the bleacher. The process is commenced by placing the flax in bundles, as received from the seeding machine, on the false bottom, until the chamber is nearly filled. The doors are then secured by screws, and steam is discharged into the chamber by a pipe which passes between the bottoms, and for some time allowed to escape through the valve-pipe in the roof, so as to remove the volatile oil contained in the straw. After some time the valve is closed; and the escape of the steam being prevented, it penetrates through the mass of the flax, softening and loosening its various parts. Water is now admitted into the metal tank, and the steam, which strikes against the cooled roof of the chamber, is condensed and made to descend in showers of distilled water, by which the soluble and softened extractive matters are washed out and carried below the false bottom, and conveyed by pipes into a reservoir and preserved. It is, however, proposed at intervals, during the operation, to allow the flax liquid to accumulate until it rises above the false bottom, and then, by the pressure of the steam, to cause it to ascend in the throw-pipes, and to descend in streams over the straw, so as completely to wash away all the softened matters. In about ten hours the entire operation may be completed, though the patentee regards it advantageous to subject the flax to the action of the steam for from twelve to eighteen hours.

The second part of Mr. Watt's process consists in submitting the straw, as it is removed, softened and swollen, from the steam chambers to the successive action of two pairs of very heavy iron rollers, somewhat resembling the seeding rollers used in the hot-water steeping establishments, for the purpose both of quickening the drying process, and of expressing any adherent colouring or glutinous matter. By this operation, also, he finds that not only is the drying facilitated, but that a considerable portion of the enveloping cuticle of the stems is removed, and that the separation of the fibre in scutching is rendered more perfect by the bruising and splitting up of the woody parts consequent upon the longitudinal pressure to which they are exposed under the rollers. This new method, which is in operation at present in the extensive works of Messrs. Leadbetter in this town, appears to offer most striking advantages. It is peculiarly adapted for rendering the separation of the fibre a manufacturing operation. No disagreeable smelling odours are evolved; and, if experience confirms the expectations of the patentees with respect to the quality of the fibre obtained, and the comparativelv low expenditure required in its production, the new process will, in no trifling degree, contribute to the extension of flax cultivation in this country.

A striking peculiarity of this process, and one which renders it exceedingly interesting to the scientific agriculturist, is, that it offers the only satisfactory method of œconomizing the matters which are dissolved from the flax plant in its treatment. The dark liquid which accumulates in the lower chamber of the vat can be obtained in a most concentrated form; it is totally free from the disagreeable odour of the flax-pool, and experiments which have been tried prove that it is found by pigs a palatable and nutritious food.

I have to apologize for the length to which this Report has extended, and I feel that some of the details which I have included in it may appear unnecessary to those who are familiar with the various process of the flax manufacture; but as many persons present, though acquainted with the beautiful fabrics, which, in every market in Europe and America, attest the skill and ingenuity of the linen manufacturers of Ulster, have probably now for the first time visited a district which, like the north of Ireland, on every side exhibits, in its steeping-establishments, busy flax-mills and extensive bleach-greens evidences of the advantages which this country has derived from the cultivation and skilful management of the flax plant, I trust, that, whilst inspecting the various processes to which our manufacturers have liberally invited the attention of the members of the Association, the outline which I have endeavoured to give them of the œconomy of the crop may tend to increase their interest in this important department of our national industry. And if my remarks on the composition of the plant and the various plans proposed for the preparation of its valuable fibre should induce any of those whom I have the honour to address to undertake investigations which may contribute to improve either the agricultural or technical management of the crop, the present visit of the British Association will be regarded, if possible, with still greater satisfaction by the manufacturers of Ulster.

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Der Hanfbau und ſeine Bereitung

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Eine Anleitung

zur beſſern Behandlung dieſes wichtigen Produktes
ſeinen fleißigen Anpflanzern
gewidmet von
dem landwirthſchaftlichen Bezirksverein.

v. Reinhard

Druck der Emmerling'ſchen Buchdruckerei in Freiburg.

Das Weſentliche der Hanfkultur im Breisgau.

Die meiſten Landesprodukte ſind ſehr im Preiſe geſunken; für einzelne fehlt es ganz an Abſatz. Der Hanf allein fand ſtets Abnehmer, und der Erlös dafür konnte im Vergleich zu andern Produkten hoch genannt werden. Dieſer Umſtand hat in gegenwärtigem Jahre den ſehr vermehrten Anbau dieſer Pflanze nach ſich gezogen.

Eine natürliche Folge hievon wird aber ein Zurückgehen der Preiſe ſein, wenn wir uns nicht bemühen, durch eine ſorgfältige Zubereitung die Preiswürdigkeit unſeres Produktes zu ſteigern, um ihm Abſatz zu verſchaffen. Thun wir es nicht, ſo laufen wir ſogar Gefahr, daß unſer Hanf bei der gegenwärtigen Stockung im Handel zum großen Theil liegen bleibt, weil man den kleinen Bedarf mit fremdem Hanf decken wird, den man ſeiner Vorzüge wegen lieber kauft, als den unſrigen, obgleich er viel theurer zu ſtehen kommt. Wer daher verkaufen und gute Preiſe löſen will, der muß den bisherigen Schlendrian, welcher nur darauf ausging, ohne Rückſicht auf die Qualität des Hanfes nur viel an Gewicht zu gewinnen, fahren laſſen; er muß künftig durch ſorgfältiges Röſten, Sortiren und Putzen den Hanf ſo darſtellen, wie ihn der Seiler, Hänfer und Spinner braucht. Die Nachläſſigkeit hierin hat unſern ſonſt trefflichen Hanf um den Kredit gebracht, den er früher hatte, und dem fremden den Vorzug verſchafft. Unter dieſen Verhältniſſen iſt es ein doppeltes Glück, daß der Hanf in dieſem Jahre von vorzüglicher Qualität zu werden verſpricht; denn dadurch ſind wir in den Stand geſetzt, ein ganz vorzügliches Produkt zu liefern, das uns auch für ſpätere Zeit empfehlen wird.

Mit dem Wunſche zu dieſem weſentlichen, von der Nothwendigkeit gebotenen Fortſchritte, in der Hanfkultur etwas beizutragen, geben wir in Nachſtehendem eine kurze Darſtellung der ſachgemäßen Anpflanzung und Behandlung des Hanfes bis zur Herſtellung des Brechhanfes, wobei wir alle künſtlichen Mittel zur Bereitung des Hanfes unerwähnt gelaſſen haben, weil ſie nach unſerer Ueberzeugung weniger taugen als die bisher übliche Handarbeit, der wir den Lohn für ihre Leiſtungen erhalten und wo möglich vermehren wollen.

Der Hanfacker.

So wenig man überall guten Wein gewinnen kann, eben ſo wenig kann man auf jedem Feld guten Hanf pflanzen. Dieſe Pflanze erheiſcht einen warmen, lockern, tiefgrundigen und zugleich kraftvollen Boden, wenn ſie gedeihen ſoll. Der Acker muß ſchon im Spätjahr tief gepflügt werden, damit der Boden durchfriert und dadurch locker wird. In früheren Jahren hielt man es für zweckmäßig, den Acker ſchon im Spätjahr ſtark zu düngen, um guten Hanf zu erhalten. In neuerer Zeit ſcheint die Düngung im Frühjahre, welche ſchneller, aber auf die Qualität des Hanfes weniger vortheilhaft wirkt, vorzuziehen. Eine leichte Düngung im Spätjahr und eine ſolche im Frühjahr, wie ſie hie und da angewendet wird, möchte daher dem Zwecke am beſten entſprechen.

Gemiſchter Stallmiſt von Rindvieh und Pferden taugt dazu am beſten; Pferdemiſt allein, treibt groben Hanf von geringerem Werth. Dieſelbe Wirkung bringt der von fetten Wieſen abgeſtochene Raſen hervor, wenn damit gedüngt wird, wie es in einigen Gemarkungen geſchicht.

Im Frühjahr muß der Acker 2 bis 3 Mal gepflügt werden, bis er ganz locker und von allem Unkraut gereinigt iſt, ſo daß er wie ein Gartenbeet hergerichtet erſcheint. Man nehme dieſes Geſchäft aber erſt dann vor, wenn der Boden gut abgetrocknet, und das Wetter warm und trocken iſt; ſodann ſehe man darauf, daß beim letzten Pflügen der

Acker nicht zuſammen ſondern auseinander gefahren wird, weil ſonſt der Hanf auf den Seiten des Ackers klein bleibt (der häufige Nachtheil übertrieben hoher Wölbung der Beete).

Die Saat.

Die Zeit, wenn der Hanf zu ſäen iſt, kann nicht allgemein beſtimmt werden. In Lagen, wo der Boden weniger Triebkraft hat, ſowie auch in trockenen Gegenden muß der Hanf früher in den Boden gebracht werden, als da, wo die Triebkraft ſtark iſt und im Mai warme Regen häufiger ſind, wie in der Nähe der Gebirge. Im erſteren Fall wird ſchon im April und Anfangs Mai geſäet, im letzteren erſt zu Ende des Mai. Die Erfahrung hat überall ſchon die richtige Zeit hiezu vorgezeichnet. Das Säen ſelbſt darf nur bei warmem trockenem Wetter vorgenommen werden. Wer nicht groben Seilerhanf pflanzen will, der ſoll ziemlich dicht ſäen; der dünngeſäete Hanf wird aus leicht begreiflichen Gründen grob.

Zweckmäßig iſt es: *häufig mit dem Saamen zu wechſeln.* Der ſogenannte ſchwere Stockſaamen, der im Ried in der Gegend von Kehl gezogen wird, liefert, in hieſiger Gegend geſäet, einen ſehr dauerhaften und langen Hanf und iſt beſonders für den leichten Boden der March zu empfehlen.

Saamengewinnung.

Der ſchönſte und beſte Saamen wird da gewonnen, wo er an einzeln ſtehenden Stengeln in den Erdäpfel- und Welſchkornäckern gezogen wird.

Dieſe Art Saamen zu ziehen, iſt ſehr zu empfehlen, weil die Pflanzung den Erdäpfeln u. ſ. w. nichts ſchadet und der Hanf von den Saamenſtengeln als Schleißhanf ganz brauchbar iſt. Das Femmeln der Hanfäcker, wie es in der Gegend von Emmendingen üblich iſt, kann zwar im glücklichen Fall den Ertrag des Hanfackers ſteigern; es führt aber auch bedeutende Nachtheile mit ſich. Dahin gehören: daß der Saamenhanf dem Acker ſehr viele Kraft entzieht;

daß der Femmel- und Maſtelhanf dem Schlaghanf an Güte bedeutend nachſtehen; daß das Feld nicht ſchon im Sommer wieder beſtellt werden kann; daß das Röſten und Brechen zweimal vorgenommen werden muß und zwar beim Maſtelhanf häufig zu einer Zeit, wo es nicht möglich iſt, eine gute Qualität zu erzielen. Hiebei darf jedoch nicht unerwähnt bleiben, daß auf ganz fettem Boden nach dem Maſtel der Waizen gerne gedeiht. Wer nur deßhalb den Saamenhanf pflanzt, weil er befürchtet, daß der Waizen im kommenden Jahr falle, der mache nach dem Schlaghanf, Reps Erdäpfel, Dickrüben oder Welſchkorn an den Acker und erſt im zweiten darauf folgenden Jahre wieder Waizen, oder ſuche durch eine tiefere Herbſtfurche dem Lagern deſſelben vorzubeugen. Die hiedurch vermehrte Fruchtfolge würde noch weiter ſehr wohlthätig auf die Feinheit und Stärke des Hanfes wirken; denn je ſeltener Hanf in einen Acker gebracht wird, deſto beſſer wird deſſen Produkt. Wir bemerken dies für die Gegenden, wo jetzt nur eine zweijährige Fruchtfolge, nämlich Hanf und Waizen, üblich iſt.

Man laſſe den Saamen vollkommen reif werden, ehe man ihn ausklopft und ſcheide ſorgfältig alle Unreinigkeiten und unreifen Körner aus, ſchütte ihn in dünner Schichte auf einen luftigen Boden, und wende ihn mehrmals um, bis er ganz getrocknet iſt, indem er ſonſt in ſtarke Gährung kommt, worauf ſich gerne Würmer erzeugen. Manche laſſen den Saamen abſichtlich gähren, um ihm eine ſchöne braune Farbe zu geben. Dieſes Verfahren iſt aber durchaus verwerflich, weil die Keimkraft dadurch zerſtört wird.

Die Ernte.

Der Hanf gilt für reif, wenn der Femmel ſtark ſtäubt und ſeine Blätter und Stengel anfangen, gelb zu werden. Meiſtens iſt ſolches der Fall gegen die Mitte des Auguſt. Man ſäume dann nicht mit dem Einheimſen, denn es iſt nachtheilig, wenn der Hanf überreif wird. Er verliert dadurch an Feinheit und Dehnbarkeit und leicht bilden ſich ſogenannte todte Haare, das heißt, es ſtehen einzelne Faſern.

von Femmelhanf ganz ab, die dann eine ſchwarze oder dunkelgrüne Farbe annehmen und ſich in der Hechel gar nicht verarbeiten laſſen. Der ſogenannte ſchlagsweiſe gewonnene Hanf, das iſt: der reife Femmel mit dem noch nicht reifen Maſtel zuſammengenommen, gibt den beſten Spinn- und Schuhmacherhanf, und nur in ganz guten feuchten und zugleich warmen Jahrgängen erreichen Femmel und Maſtel, ein jeder für ſich beſonders, eine für jene Zwecke brauchbare Qualität.

Das bisher übliche Ausreißen (Liechen) der Pflanze mit der Wurzel iſt durchaus fehlerhaft, weil der anhängende grobe aber ſchwache Baſt der Wurzel bei der Verarbeitung wieder entfernt werden muß, was alle Arbeit bis zum Spinnen vielfach ſtört und vertheuert und wodurch die Qualität des gehechelten Hanfes und des daraus geſponnenen Garnes verſchlechtert wird. Aber auch beim Brechen des Hanfes ſind die Wurzeln nachtheilig, weil ſie die Arbeit erſchweren und mit der harten Wurzel, wenn ſie zerſchlagen wird, immer auch Theile von gutem Baſte entgehen. Der Hanf muß daher nicht ausgeriſſen (gelochen) ſondern am Boden abgeſchnitten werden, wozu eine ſtarke Sichel zu gebrauchen iſt, oder können die Wurzeln gleich nach dem Ausreißen mit einem Beile auf einem kleinen Holzblöckchen abgehauen werdbn. Dieſes Verfahren iſt in andern Ländern, deren Hanf dem unſrigen vorgezogen wird, ſchon längſt eingeführt. Nur geringer und grober Hanf darf mit den Wurzeln genommen werden, weil der Seiler, für den er allein taugt, den Wurzelbaſt zur Fabrikation ordinärer Seilen verwenden kann.

Um einen möglichſt hohen Preis zu erzielen, iſt es außerdem nothwendig, daß der Hanf genau ſortirt werde. Wer groben und feinen Hanf zugleich beſitzt, der unterlaſſe es ja, beide Theile zu vermiſchen, *weil eine jede Sorte für ſich zu beſondern Zwecken verwendet wird und deßhalb ſorgfältig getrennt bleiben muß. Eben ſo iſt der kürzere Hanf mit möglichſtem Fleiß von dem langen auszuſcheiden, welche Arbeit am beſten gleich beim Abſchneiden* auf dem Feld vorgenommen wird. Der kürzere Hanf iſt nicht nur von viel geringerer Qualität als der längere, ſondern die ungleiche Länge der Faſern ſtört auch die ſpätere Verarbeitung außerordentlich und macht es beinahe unmöglich, etwas recht Gutes daraus zu fabriciren. Der kürzere Hanf iſt überdies ſchwerer zu reinigen als der lange und erfordert ſchon deßhalb eine beſondere Bearbeitung.

Derſelbe kann zum Hausgebrauch verwendet oder an den Seiler verkauft werden. Der geringere Werth wird durch den höheren Erlös aus dem ſortirten langen Hanf reichlich erſetzt.

Nach dem Abſchneiden und Sortiren wird der Hanf in kleine Büſchel leicht gebunden und dann auf größere Bunde gebracht, um ſogleich zur Röſte geführt zu werden, wenn er weiß gemacht, das heißt grün gerözt werden ſoll.

Das Röſten oder Rözen.

Eine glänzend weiße Farbe und ein dünner, weicher und ſtarker, von allen Unreinigkeiten freier, langer Baſt, ſind die Haupterforderniſſe desjenigen Hanfes, der an den Handelsmann oder an den Hanffabrikanten abgeſetzt werden will. Das zweckmäßige Rötzen tragt hiezu viel bei.

Diejenigen Ortſchaften, welche ein ſolches Produkt zu liefern im Stade ſind und nicht ſehr entfernt von Flüſſen wohnen, thun daher wohl daran, wenn ſie keine Koſten ſcheuen, und ſich gute Rözen mit klarem Waſſer einzurichten, wenn ſie dergleichen noch nicht beſitzen. Wir ſind z. B. überzeugt, daß die Orte Endingen, Bahlingen, Eichſtetten, Waſenweiler, Gottenheim, Waltershofen u. ſ. w. in deren warmen und windſtillen Thälern ein vortrefflicher feiner Hanf wächſt, viel gewinnen würden, wenn ſie ſolche Rözen einrichteten. Das Rözen in unſern Flüſſen ſelbſt iſt gefährlich, wegen dem manchmal plötzlichen Anſchwellen der Gewäſſer, wodurch der Hanf leicht fortgeſchwemmt wird, oder doch eine ſchlechte Farbe bekommt. Um kleinere und größere Landwirthe zugleich zu befriedigen, und damit im Röſten kein Aufenthalt entſteht, ſollten in jeder hanfbauenden Gemeinde Hanfrözen von verſchiedenem Umfang in genügender Zahl vorhanden ſein.

Eine gute Hanfröſte ſoll 6 Fuß tief, 10 Fuß breit, 10 bis 20 Fuß lang und ſo eingerichtet ſein, daß alle Theile des eingelegten Hanfes leicht von reinem Waſſer durchdrungen werden können. Der Boden und die Wandungen müſſen mit Holz oder Steinen ausgelegt, und für die genügende Zuleitung von reinem klarem Waſſer zur gehörigen Zeit, muß geſorgt ſein. Vor dem Einlegen ſind die Hanfrözen ſorgfältig zu reinigen und alsdann mit friſchem Waſſer zu füllen. Da wo es zum Beſchweren des Hanfes an Steinen fehlt und man zu Kies oder Erde ſeine Zuflucht nehmen muß, ſchütze man den Hanf gegen das Eindringen der Erdtheile, welche ſeine Farbe verderben.

Es iſt ferner darauf zu ſehen, daß das Waſſer in der Röze ſtets einige Zoll über dem Hanf ſteht, weil ſonſt der oberſte nicht gut gerözt wird und grün bleibt. Man hüte ſich auch, kurzen geringen Hanf mit langem vermiſcht einzulegen, weil der letztere längere Zeit zum Rözen erfordert, als der erſtere. Die beſte Zeit zum Rözen des Hanfes iſt ſtets der Sommer; das kältere Waſſer in den übrigen Jahreszeiten macht ihn ſpröde und rauh, der andern Nachtheile, welche ſich beim Herausnehmen aus dem Waſſer, Trocknen u. ſ. w. bei kaltem und nebelichtem Wetter zugeſellen, nicht zu gedenken.

In Gegenden, wo der Hanf auf den Stengeln, durch Aufſtellen im Felde getrocknet wird, um ſo verkauft oder ſpäter gerözt zu werden, unterlaſſe man nicht, die einzelnen Büſchel während dem Trocknen einmal zu öffnen und die innern Stengel nach außen zu kehren, weil dieſelben ſonſt leicht Schaden nehmen. Dieſer ſogenannte dürr geröſtete Hanf, wird meiſtens etwas feiner als der grün geröſtete, er erreicht aber die ſchöne weiße Farbe des letztern nie.

Der feinſte Hanf iſt der graue oder ſchwarze. Er wird häufig zu Hausleinwand verwendet, iſt aber für den Handel im Großen von weniger Belang, als der weiße. Er wird durch die Thau- und Winterröze gewonnen. Man macht ihn meiſtens in Gegenden, wo der Hanf nicht lang aber fein wächſt und wo gute Gelegenheiten zur Waſſerröſte fehlen. Die getrockneten Stengel ſind dünn auf einem Stoppelacker oder auf Grasfeld auszubreiten und ſo lange der Witterung auszuſetzen, bis der Baſt ſich leicht vom Stengel ablöſt. Es iſt nothwendig, den Hanf mehrmals vom Boden aufzuheben und zu wenden, damit die unten liegenden Stengel nicht faulen. Bei anhaltend naſſem Wetter iſt dieſe Vorſicht beſonders nothwendig.

Die Zeit, wie lange der im Waſſer zu rözende Hanf in der Röze zu bleiben hat, kann nicht allgemein beſtimmt werden. Es hängt ſolches von der Stärke des Hanfes einerſeits und anderſeits von der mehr oder weniger warmen Witterung ab. Der Hanf kann für gerözt gelten, nachdem ſich auf dem Waſſer häufig Blaſen gezeigt haben, deren übler Geruch beweiſt, daß die nöthige Gährung vor ſich gegangen iſt. Man halte das Rözen aber keineswegs für vollendet, wenn die groben Holztheile des Hanfſtengels ſich nur erſt zur Noth ablöſen laſſen und eine helle Farbe angenommen haben. Der Hanf muß vielmehr ſo lange im Waſſer bleiben, bis auch von den Spitzen des Hanfſtengels der Baſt ſich leicht abziehen läßt und die Rinde oder der Leim (Harz) des letzteren hinreichend durch die Gährung, welche das Waſſer befördert, aufgelöſt iſt und die Faſer als ein dünnes weißes glattes und ſehr geſchmeidiges Band erſcheinen läßt, das ſich durch leichtes Reiben noch weiter in feine Faſern theilt oder ſpaltet.

Wenn der Hanf aus dem Waſſer genommen, ſo breite man ihn auf einem Stoppelacker oder friſch gemähten Wieſe aus, wo er einige Tage der Witterung ausgeſetzt liegen bleibt, ehe man ihn zum völligen Trocknen aufſtellt.

Das Hanfbrechen.

Iſt der Hanf gehörig ſortirt und gut gerözt worden, ſo geht das Brechen leicht von Statten. Es verſteht ſich von ſelbſt, daß derſelbe einen hohen Grad von Trockenheit haben muß, wenn ſich die Holztheile leicht vom Baſte ablöſen ſollen. Der beim warmen Sonnenſchein gedörrte und gemachte Hanf wird beſſer, als der auf der Darre oder am Ofen gedörrte.

Sehr fehlerhaft iſt es aber, wenn Hanf bei ſchlechtem Wetter oder am frühen Morgen und ſpäten Abend, wo die Luft feucht iſt, gemacht wird.

Beim Brechen darf es der Arbeiter an der nöthigen Anſtrengung nicht fehlen laſſen, um den Hanf von anhängenden Holztheilen ganz zu befreien. Es iſt ſolches durchaus nothwendig und es muß, wo es daran fehlt, zu dieſem Zwecke eine feine Breche angeſchafft werden.

Wer eine ganz vorzügliche Qualität von Brechhanf erzielen will, der lege den von der Breche fertigen Hanf eine halbe oder ganze Stunde unter den Reibſtein. Hierdurch wird der Hanf viel weicher anzufühlen und läßt ſich leicht von allen Unreinigkeiten befreien, ohne merklich an Gewicht zu verlieren.

Zurüſtung.

Iſt der Hanf ſo zubereitet, ſo binde man die einzelnen Händevoll, nachdem ſie in gleicher Länge zurecht gelegt worden ſind, auf leichte Boſen, ſchlage ſie ſchön glatt auf die halbe Länge zuſammen und mache Bunde von genau 25 Pfund daraus, die nicht mit Stroh oder Weiden, ſondern mit Hanf von der gleichen Sorte zweimal gebunden ſein müſſen. Der kleine Umfang der Bunde trägt viel dazu bei, den Betrug im Vermiſchen der Qualität zu verhindern und den Hanf beim Wägen und Verladen vor dem Zerreißen zu bewahren. Iſt einmal das Gewicht der Bunde und die Bezeichnung der genau ſortirten Qualität eingeführt und ſind Strafen auf die Nichterfüllung der deßfallſigen Vorſchriften geſetzt, ſo iſt das Geſchäft für den Käufer und Verkäufer ein angenehmes und leichtes.

Aufbewahrung.

Als Aufbewahrungsort für den fertigen Hanf empfiehlt man kühle aber ganz trockene Räume. In die Keller darf der Hanf in keinem Fall gebracht werden.

Schlußwort.

Wir haben in Vorſtehendem nur diejenigen Punkte der Hanfkultur berührt, auf die es hauptſächlich ankommt, um einen ſchönen und guten Hanf zu bereiten. Wer unſere Vorſchriften befolgt, der wird ſeine Rechnung dabei finden, ohne daß er gerade einen viel größern Aufwand an Geld und Arbeit zu machen hätte, als bei der bisherigen ſchlechten Bearbeitungsweiſe.

Es gehört nur Fleiß, Aufmerkſamkeit und Sinn für Reinlichkeit und Ordnung dazu, um einen größern Gewinn zu erzielen und ſich das freudige Bewußtſein zu verſchaffen, etwas recht Brauchbares und in ſeiner Art Vollkommenes zu Tag gefördert zu haben. Der betrügeriſche Geiſt, der darauf ausgeht, ſich durch Anfeuchten, Verunreinigen und Verfälſchen der herrlichen Pflanze, womit der gütige Schöpfer unſer ſchönes Breisgau jedes Jahr ſchmückt, Vortheil zu verſchaffen, ſei für immer verbannt; denn der hieſige Hanf iſt ſo gut der Veredlung fähig als der italieniſche und ruſſiſche, oder als der belgiſche und holländiſche Flachs und nur der Thor verſchmäht es, ſich damit zu befaſſen und den reichen Lohn dafür in Empfang zu nehmen.

Anfangs Auguſt 1850.

G. 145.
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THE TENTH
ANNUAL REPORT AND TRANSACTIONS
OF THE
ROYAL SOCIETY
FOR THE
PROMOTION AND IMPROVEMENT
OF THE
GROWTH OF FLAX IN IRELAND;

WITH

AN APPENDIX,

TREASURER'S STATEMENT OF ACCOUNTS,

AND

LIST OF SUBSCRIPTIONS AND DONATIONS.

For the year ending 31*st October*, 1850.

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5

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RULES OF THE SOCIETY.

1st.—That all persons paying a subscription of *one guinea*, annually, be constituted ordinary members.

2d.—That the Society, besides its ordinary members, do consist of a President, Vice-Presidents, a General Committee of Management, a Treasurer, and a Secretary.

3d.—That the Treasurer and Committee of Management be annually elected, by a general meeting of the Society, from among its members.

4th.—That the Society do meet in the month of November, of each year, to elect officers, hear reports, make or alter rules, and transact such other business as may come before it.

5th.—That the General Committee do meet on the last Wednesday in each month, for the transaction of the ordinary business of the Society, three members required to constitute a quorum; the Secretary to call special meetings, at the request of three members of the Committee, who may judge it expedient to do so.

6th.—That, as the utility of this Society will be much promoted by a number of persons taking an interest in it, it will be accessible to all, on the payment of one guinea, annual subscription; but, as the funds so procured would be, most probably, inadequate to its management, donations shall be solicited from persons who can afford such sums as will enable the contemplated objects of the Society to be effectually carried out; and it is confidently expected, that, for an object of such national importance, such contributions will be given, as will put its success beyond a doubt, as far as the means of working it are concerned; and that the zeal and discretion of its managers will secure that benefit for the undertaking which its importance demands.

7th.—That every one who becomes a member shall continue to be considered as such, and his subscriptions justly due to the funds of the Society, until he gives notice, in writing, to the Secretary, of his intention to withdraw.

8th.—That no member, in arrear two years or more, shall be permitted to take part in any debate of the Society, or give a vote upon any question, until such arrear be paid up.

9th.—The Treasurer shall receive all monies belonging to the Society, and lodge same in the Bank which may be appointed to keep the accounts, when it may accumulate to the sum of £50 in his hands. He shall also draw cheques, and pay such sums as may be voted by the General Committee, at its meetings, but not without its authority; and said cheques shall be signed by the Chairman of the meeting, the Treasurer adding also his own signature. He shall also furnish a yearly statement of accounts, and report monthly receipts and expenditure, at the General Committee meetings, shewing a list of members whose subscriptions remain unpaid, at least once a-year.

10th.—The Secretary shall conduct the correspondence of the Society, keep the books of it and of the Committee, take charge of all matters connected with their proceedings, give notice of meetings to those entitled to them, and attend to any duties the Committee may direct.

11th.—All new rules, or alterations of the present regulations, to be made at the annual meeting of the Society; notice of such rule or alteration to be proposed having been given to the Committee, at least a fortnight previous to the general meeting.

12th.—That this Society shall encourage Branches, in different districts, for the purpose of forwarding its objects,—to correspond, and otherwise cooperate with the General Committee; the President of each of the Local Branches to be an *ex-officio* member of the General Committee, and to be entitled to the regular notices of meetings,—each Branch to consist of subscribers to the Society only.

13th.—That, in order to afford every facility to Local Farming Societies and Branches, in the South and West of Ireland, for obtaining the services of the Flax Society's Agriculturists, the following be the regulations in future:—

First.—Every Branch or Local Farming Society, as aforesaid, which shall incorporate itself with the Flax Society, by contributing to it not less than *Ten Pounds*, annually, shall be entitled, while it so contributes, to the service of a Flax Agriculturist, for two weeks in the sowing, and three in the pulling seasons; the salary of the Agriculturist, and his travelling expenses, to the district, to be defrayed by the Flax Society, but his expenses, while occupied within the bounds of the district, to be defrayed by the Local Society or the individuals employing him.

Second.—The Flax Society will send to the Local Society, so qualifying, one of the Agriculturists, during the Winter, if required, to select and prepare land for the flax crop.

Third.—A sufficient supply of the Society's publications will be furnished, free of charge.

Fourth.—An additional week of the Agriculturist's services will be given, for every additional *two pounds* subscribed by the Local Society.

14th.—That, in case of individual landed proprietors being desirous of introducing flax culture, in a district where there is no Local Society, or where it has not qualified, a subscription of not less than *one guinea* to this Society will entitle each individual to a certain time of the Agriculturist's services, to be regulated by the Committee of the Flax Society; and that, in all such cases, the expenses of the aforesaid Agriculturist, to and from the district, and while engaged on the estate, shall be defrayed by the landed proprietor so requiring him.

ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

(From The Northern Whig, of the 30*th November*, 1850.*)*

The tenth annual meeting of this Society was held yesterday, in the Society's rooms, Commercial Buildings. It was cheering to see so large an attendance, not only of gentlemen belonging to this town and neighbourhood, but of parties from a distance, all of whom manifested a deep interest in the proceedings of the Society. Among those present, we observed the following :—Earl of Erne, Earl of Roden, Lord Dufferin, the Lord Bishop of Down, Connor, and Dromore; Viscount Jocelyn, M.P.; Sir R. Bateson, Bart., Belvoir-park; Sir J. M. Stronge, Bart., Tynan Abbey; William Sharman Crawford, M.P.; Alexander Shafto Adair, M.P.; Robert J. Tennent, M.P.; Richard Ker, M.P.; Edmund M‘Donnell, D.L., Glenarm Castle; R. B. B. Houston, D.L., Orangefield; John M‘Neile, D.L., Parkmount; John F. Ferguson, D.L.; John Temple Reilly, D.L., Scarva House; J. Shouldham, J.P., High-Sheriff of County Longford; J. S. Crawford, J.P.; James Agnew, J.P., Cairncastle Lodge; Thomas Greg, J.P., Ballymenoch; Robert Percival Maxwell, J.P., Groomsport House; Andrew Mulholland, J.P.; S. K. Mulholland, J.P.; F. Filgate, J.P., Hillsborough; John Hancock, J.P., Lurgan; C. G. M. Skinner, J.P., Dundrum; John Andrews, J.P., Comber; Thomas M. Birnie, J.P.; John Thomson, J.P., Lowwood; Wm. Coates, J.P.; Wm. Bell, J.P., Abbeyleix, Queen's County; R. F. Gordon, J.P., Craigdaragh; H. Crace, Agent to the Earl of Lonsdale, Esqrs.; Revds. Dr. Murphy, Thomas Knox, F. Blakely, and J. Killen; Professors Hodges and Hancock; Captain Kennedy, Major Houghton, J.P.; Spencer Percival, Finnebrogue; Jonathan Richardson, Ingram; Robert M‘Kibbin, M.D.; William G. Andrews, James Campbell, John Herdman, John Charters, Richard Niven, Richard Hull, John Borthwick, William Dargan, John Hind, John Birney, James Malcolm, Charles Duffin, A. Bernard, A. Koch, —— Lyle, Derry; James Grimshaw, John Preston, John Owden, R. Adams, Coleraine; David Connor, John Roberts, William Pirrie, Robert M‘Adam, James Orr, M.D.; John Lamb, John Finlay, Jacob Bell, Alexander Dickson, Belturbet; Alexander Davison, John Hunter, jun.; Victor Kennedy, Thomas M'Cullogh, Robert Roddy, Jonathan J. Richardson, John M'Master, W. B. Pugh, Leeds; John Turnley, Drumnasole; William Valentine, William Steen, Richard Davison, Edward Walkington, Michael Andrews, Robert M'Clelland, Wm. Ewart, jun., James Hart, Francis Hull, Henry S. Crawford, Samuel Vance, William Gamble, James Standfield, Isaac J. Murphy, —— Beggs, London; James Lemon, Adam Howie, Richard Robinson, J. Fiers, Esqrs., &c., &c. Some specimens of flax, &c., were arranged on tables for the inspection of the meeting. The following is a list of the chief articles :—Flax, steeped on Schenck's patent system, both scutched and hackled, from the Cregagh concern, County Down ; Latimerstown, County Wexford ; Dunmanway, County Cork ; Lord de Vesci's establishment, Abbeyleix, Queen's County ; and from Messrs. Marshall, Leeds, the latter having been scutched by Messrs. M'Adam Brothers' new machine; samples of flax steeped in the ordinary way, from Mr. O'Brien, County Cork; the Earl of Courtown, Gorey, County Wexford ; and Mr. White, Broughshane. The latter had produced the enormous yield of 70 stones 7lbs. to three and a-half roods Irish, and sold at 12s per stone, being at the rate of eighty-one stones per Irish acre, value 48*l*. 12s—one of the most valuable crops on record. It had been grown from Riga seed, and was managed under the advice of Mr. O'Hara, one of the Society's agriculturists. Samples of prime home-saved seed were shewn from Mayo, Cork, Down, and Wexford ; and from Yorkshire, by Messrs. Marshall. There were also specimens of boiled yarns, unbleached, bleached, and dyed threads, and bleached lawns and linens made from the patent steeped flax. Some bleached flax, prepared by Messrs. W. Orr & Co., of Glenalina, was shewn. Much interest was excited by samples of the new fabrics of cords and velvets, made from flax yarn, and sent by Mr. Astley, the inventor. It is hoped that this manufacture may be taken up in Belfast, as it appears that these fabrics can be made cheaper than the corresponding kinds from cotton, and would be likely to command a large sale. A sample of flax, as prepared on Donlan's dry system, was shewn, and presented a most unfavourable contrast with the beautiful specimens of steeped flax.

The Earl of Erne occupied the Chair.

The Chairman said that he had great pleasure in attending the meeting, and presiding over it, though he regretted very much that their Noble President was not present, because he thought that there was no one in the country more anxious to do everything in his power to promote the objects and interests of the Society than Lord Downshire. He was rejoiced to hear from the Secretary that the Society was in a flourishing condition, and he hoped that it would continue so, because there was no other Society in Ireland more conducive to the general welfare of the country. He had also been informed that several branch Societies were about to be established in different parts of Ireland, and, if it might not be considered presumptuous in him, he would venture to give a little advice to the patriotic gentlemen who were engaged in the work. He had himself taken great interest in the growth and cultivation of flax in Ireland, and had at present on his property in the County Donegall between 300 and 400 acres of flax. He would say that farmers should be very cautious for the first year in growing flax, because it was one of the tenderest plants that could possibly be. The first thing was to teach the farmer how to grow it, and to point out to him the best sort of ground for its cultivation, for, if the ground were too rich, it would not answer; and, if too poor, it would be as bad. Therefore, a very great difficulty to its cultivation arose from persons unaccustomed to grow this crop not knowing the proper ground for it. Farmers should be careful in selecting a proper soil, in the first place; the second step necessary was to get good flaxseed; and the third was to have proper, and, he would say, honest, persons to purchase the flax from them. Because, in the North, they got large prices for their flax, persons in other places imagined that they had nothing to do but to grow that crop, and get the same prices; but all was not gold that glittered. These parties should be cautious lest they burned their fingers, and go cautiously to work, by not sowing too great a breadth at first. He had lately received a letter on this subject from his agriculturist, a man who understood well the growing of flax. [His Lordship then read an extract from the letter, corroborating his statement.] Now, he did not want to throw any damp on the cultivation of flax, but he wanted those patriotic gentlemen who were about establishing the Societies to which he referred to give due consideration to the matter. He hoped and trusted that the cultivation of flax would be one of the means of working out the regeneration of Ireland; and they would, on this account, and because he had the thing so much at heart, excuse him for having so far trespassed on them.

Mr. MacAdam said that, before reading the report, he wished to mention that, a few days since, he had received a letter from Lord Downshire, in which his Lordship expressed his extreme regret that he could not attend their meeting, and take his place as President of the Society, in consequence of being in England; and his Lordship requested that he (the Secretary) should state so. The following is the report:—

TENTH ANNUAL REPORT OF THE COMMITTEE TO THE ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

At the close of the tenth year of the Society's labours, your Committee have again to lay before you a detailed report of their operations, in carrying out the objects of the Society, since the last annual meeting. In so doing, they are happy to be in a position to congratulate you on the satisfactory state of the Society's affairs. In their last report they shewed that many circumstances had concurred to augur a favourable progress towards the great ends which the Society has in view; and they are now enabled to confirm the opinion then expressed, and to direct your attention to the cheering prospects before them. They feel assured that you will pardon a repetition of former statements, where it may be necessary to revive them, as, from the importance which attaches to the causes of the Society's formation, they cannot be too urgently impressed on the public.

CONTINUED AID FROM GOVERNMENT.

In the last two annual reports, your Committee had to acknowledge the timely assistance afforded the Society by the Government, on the especial recommendation of the Lord Lieutenant, by granting two sums of £1,000 each in aid of the operations of 1848 and 1849, in certain Counties of Munster and Connaught. Owing to the distressed condition of these districts, and the inability, in many cases, of the landed proprietors to bear the expense of maintaining the Society's agriculturists, your Committee, soon after the last annual meeting, laid a renewed application before the Lord Lieutenant, and, through his Excellency's kind influence, again obtained a third grant of £1,000, under the provisions of the Act 11 and 12 Vic., chap. 115, allocated, in certain proportions, for the practical instruction of flax-growers, in the Counties of Cork, Kerry, Clare, Limerick, Tipperary, Galway, Mayo, Sligo, Leitrim, and Roscommon. The greater part of this sum has been expended, in the manner required, in the different Counties named, excepting Roscommon, and the balance has been reserved by your Committee for the same districts next year.

GENERAL OPERATIONS.

The operations of the Society, during the present year, may be classed under two heads—those undertaken in the districts to which the Government grant was restricted, and those where local contributions were made towards the expenditure entailed on the Society. In the former were the Counties of Cork, Kerry, Clare, Limerick, Tipperary, Galway, Mayo, Sligo, and Leitrim; and in the latter, districts of Antrim, Down, Tyrone, Fermanagh, Westmeath, Queen's County, and Wexford. In these several districts sixteen of the Society's staff of agriculturists were employed, in their usual course of instruction and superintendence at the sowing and the pulling seasons. As it had been found of much advantage, last year, to point out the soils best suited for flax culture, in districts where it was about to be grown, and to give directions for its proper preparation during the Winter months, this plan was acted upon at that period, and the result has been that tyros in flax culture have not been disheartened by indifferent produce arising from an indiscriminate sowing on all kinds of soil, badly prepared to receive the seed. Much attention was devoted to the drying and saving the flax straw intended for steeping on Schenck's system; and your Committee will take particular care to make all the Society's hands enforce the proper mode of conducting these processes, as the value of the straw to the steeper, and consequently to the farmer, is much influenced by the manner in which it is saved. At the conclusion of the season's operations, some of the agriculturists were allowed to remain in their districts until they had selected land for next year's crop.

In consequence of the great interest manifested in the flax question, and the determination, in many parts of Ireland, of immediately commencing the culture of the crop on an extensive scale, two of the Society's chief agriculturists have been sent on a preliminary mission, to report upon the soils in each locality, giving, at the same time, general instructions to landed proprietors and farmers, as to their selection and preparation for next year's crop. The chief districts to which they have been sent are in the Counties of Louth, Longford, Westmeath, King's County, Tipperary, Carlow, Kilkenny, Waterford, Cork, and Galway.

THE FLAX CROPS OF 1849 AND 1850.

In their last report, your Committee stated that, owing to the collection and compilation, each year, by Government, of the returns of agricultural produce, they had ceased to bring forward any estimates of the breadth of flax sown annually in Ireland, as the machinery through which the Government returns are collected ensures it being much more correct than they could hope to make it. According to Captain Larcom's report, it appears that the Irish flax crop of 1848 was 53,863 acres, and in 1849, 60,014, being an increase in the latter year of 6,451 acres. The County of Donegall produced the largest quantity, 12,662 acres, being one to every eighteen of arable land, while Kerry, with about the same area, produced but 136 acres. The Province of Ulster produced 57,651 acres of flax, while Munster, with about the same superficial area, produced but 937. Monaghan gave 6,775, while Limerick, with two and a-half times its area, yielded only 94 acres. At the head of the Southern and Western Counties appear those where the Society has already made some footing—Mayo giving 524 acres, which is more than all the rest of Connaught, and Cork 458, being about the half of what Munster produced. Sligo, again, with 218 acres, Clare 179, and Wexford 115, contrast favourably with such Counties as Wicklow, with 7, Waterford 11, and Kilkenny 16 acres ; the three former having already made a commencement under this Society's superintendence, while the three last-named have only now begun to bestir themselves. These details are all from the agricultural returns for 1849. Those for the present year not having been as yet compiled, it can be only stated, that there is reason to believe the breadth of land under flax, in 1850, to have been greater than in 1849, more especially in the Southern and Western Provinces, where many of the Counties would make a more respectable figure than in the table just quoted. The sowing would have been still more extended, had it not been for the scarcity and high prices of seed. The quality of Irish flax, this year, is not so good as usual, the fibre being found to want mellowness, and being difficult to work. The yield has also not proved so large, in some localities, as was expected from the very luxuriant appearance of the growing crop. Notwithstanding this, however, the brisk demand and high prices for the fibre have so well remunerated the farmer, especially when contrasted with the low rates for other kinds of agricultural produce, as to ensure a greatly increased breadth being sown next year; while, from the large supply of seed expected from abroad, and the quantity saved at home, farmers may be certain of obtaining what they require.

THE PATENT STEEPING SYSTEM.

The system of steeping flax in hot water, brought under the notice of this Society by the late Mr. Schenck, in 1847, has, from the first, had the earnest attention of your Committee. While approving the general principle, they have been cautious in pronouncing a decided opinion upon its details, in consequence of some objections having been made by parties in the North of Ireland. In order fully to investigate the grounds for these objections, they gave the matter in charge to a Sub-Committee, whose report, in which your Committee very fully concur, will be laid before the Society at the present meeting; and they feel confident that it will sufficiently justify you in giving every encouragement, in all parts of Ireland, to the carrying out of the patent system. In the course of these investigations, your Committee, being made acquainted, from time to time, with the results of the various experiments which had been conducted with a view to testing the merits of the plan, considered it advisable to give publicity to them; and, in consequence of their favourable nature, many parties have been induced to establish steeping concerns in different localities. The adoption of the system has been much facilitated by your Committee having induced the late patentee to lower his terms for the right of working.

In addition to those reported last year, as already organised, at Newport and Ballina, County Mayo; Crieve, County Monaghan; and Cregagh, County Down, others have since been established at Latimerstown, County Wexford; Abbeyleix, Queen's County; and Glasslough, County Monaghan; while preparations are being made for others at Omagh, County Tyrone; Strabane, near Londonderry; Toome, County Antrim; Craigdaragh, Ballinabinch, and Portaferry, County Down; Ballymahon, County Longford; Roscrea, King's County; Millford, County Carlow; Waterford; Mallow, County Cork; Limerick; Tuam, County Galway; and Sligo. It is probable, therefore, that when next year's crop reaches maturity, there will be upwards of twenty steeping concerns ready for work, capable of preparing the produce of 6,000 or 7,000 acres, or about one-tenth of the average breadth of flax at present cultivated in Ireland.

Your Committee have given their best attention to all new projects brought forward for preparing flax fibre for sale, as the Society must be naturally solicitous to render every improvement auxiliary to the advantage of the grower, and to the perfecting of the products of his crop. They have, therefore, carefully investigated each new plan that has been submitted, and, for so far, they believe that nothing appears to combine so many advantages as Schenck's system. Within the last few months, a plan of separating the flax fibre without steeping has been brought forward in London, by Mr. Donlan, which has attracted great public attention. Your Committee are of opinion, however, that the greatest caution should be exercised in the consideration of these statements, from the absence of data supported by the opinion of practical persons, competent to form a judgment on the merits of the proposed process, and from the fact that the dry preparation of flax fibre has been frequently brought forward, at former periods, and in different countries, but has, in all cases, been given up, owing to its inutility. Although it would be unjust to the inventor for the Society to pronounce decidedly against his plan, without full information on all its details, yet your Committee think, from the partial evidence which they have been able to collect, that there is no ground for supposing this process to be so advantageous, either to the producer or to the consumer, as Schenck's system; and they hope, therefore, that parties who have intended to adopt the latter may not be deterred by the plausible but unsubstantiated statements relative to the former which have appeared in the public journals.

DIVISION OF LABOUR IN FLAX MANAGEMENT.

It was early recognised by your Committee, that great advantage would be derived from the culture of the flax plant, and the preparation of the fibre for sale, being separated into two distinct departments, requiring the farmer simply to prepare the soil, sow the seed, and pull and dry the mature flax stems ; and leaving to other parties the steeping, drying, and scutching operations. Being aware that in Belgium a large proportion of the flax crop is purchased by factors from the growers, who steep it in the River Lys, and bring the fibre to market, your Committee, in 1843, encouraged some enterprising and experienced individuals to undertake a similar system in Ireland, and the Society awarded them gold medals in testimony of its approval. But, although the advantage was apparent of superior quality and handling in the flax thus treated, from a variety of causes it was not found to be profitable to the undertakers; and there is reason to believe that the system cannot be made practically available in Ireland. Schenck's hot-water method appears, however, to combine equal advantages in the quality of the product, with a fair profit to those who may embark in it as a business undertaking. While it is probable that those farmers who are particularly skilful in the management of their crop may produce as good an article by the ordinary mode, the proportion of such is so small, to the great mass of flax growers, that there can be no reasonable doubt the average quality of flax brought to market from any district would be greatly improved by the adoption of the new system. In the value of the seed, which would be all saved by the new process, a yearly addition of fully a quarter of a million sterling would be made to the produce of the Irish flax crop—a fact, of itself sufficient to warrant its general adoption. But the most important advantage of this method, as relating to the general extension of flax culture in Ireland, is the immediate market thus afforded to the grower, who is frequently deterred from an extension of his flax crop by the risk and uncertainty attending the ordinary process of steeping in the open air, as well as by the difficulty of managing a large quantity, all of which has to be steeped at the same time; while, in many districts, the absence of facilities for watering precludes farmers from attempting its culture. In the introduction of the crop where it has not hitherto been grown, the establishment of a steeping concern and scutch-mill at once removes all the difficulties arising from the critical nature of the ordinary processes and the want of a market on the spot for the fibre. With proper instructions in the choice of soils, their preparation, the selection of seed, and the sowing, pulling, and saving of the plant, the farmer will be enabled to produce a good article of flax straw, while the capital, skill, and undivided attention of the steeper will ensure that the fibre is brought to the market in a satisfactory state. Your Committee, therefore, consider that a much more rapid development of flax cultivation will take place all over the country, by the carrying out of Schenck's system, than if the growers were obliged to depend on the old method of manipulation.

SAVING OF FLAXSEED.

The value of the seed of the Irish flax crop, during the ten years of the Society's labours, cannot be estimated at less than 2,000,000*l*. Of this large amount probably not more than one-tenth has been rendered available, the rest having all been steeped with the flax, and thus utterly lost. Your Committee have been untiring in their exertions to impress upon the farmers the lamentable waste arising from this practice; but even yet with only partial success. The reasons which have been instrumental in causing farmers to neglect this advice are various. Many could not be made to believe that the quality of the fibre is not injured by taking off the seed, and this opinion has been strengthened by the operation of rippling being often carelessly performed, with inefficient tools, so as to tear and break the ends of the flax. It was also found difficult, in many cases, to carry on the rippling and steeping of a quantity at the same time. But the chief obstacle arose from the unfavourable weather which frequently sets in in our climate at the pulling season, rendering it very difficult to dry the seed properly in the open air, and obliging the growers to kiln-dry it, which, when hurriedly done, causes the seed to shrivel, and leaves it of little comparative value. It has only, therefore, been in certain districts that the saving of flaxseed has become at all general, while in others it has not been practised at all. It is with no little satisfaction, therefore, that your Committee have to call your attention to the fact that the drying of the flax stems, for Schenck's patent process, necessitates the preserving of the seed, and ensures its being saved of the best possible quality. Flaxseed thus saved can be employed in two ways, either for sowing again or for cattle-feeding. There is an annual import from foreign countries into the United Kingdom of about 650,000 quarters of seed and 70,000 tons of oilcake made from it, value together about £1,950,000, all of which could readily be supplanted by the home-grown article, while the valuable manure which it produces would return to the soil the greater part of the substances taken from it by the plant. To meet the annual demand for sowing, about 28,000 quarters of seed would be required, at an average value of £112,000. Nor would the money value be the only advantage of producing this at home. It often happens, as in the case of the present year, that enough foreign seed cannot be procured to meet the demand, and while its price is so much enhanced as to place its purchase beyond the means of the poorer class of farmers, much land intended for flax is put in other crops, after the import of seed has been exhausted. It is very gratifying to find that more than 6,000 bushels of seed from the steeping concerns were sold last Spring to farmers, and that the produce, as in all instances where *good* home-saved seed is used, was abundant, and generally excelled the crops from foreign seed. Your Committee calculate that nearly 40,000 bushels of Irish seed will be available for next sowing season, from this, and other sources. They look confidently forward to a period not far distant, when the import of foreign seed will be restricted to the quantity necessary to maintain the vigour of the plant, as it has been found that if the same strain of seed be used for successive years it degenerates in quality, but this might be obviated by changing the seed to different soils as is done in the case of other plants.

SCUTCHING MACHINERY.

The frequent and sustained attempts made by your Committee to apply hand labour in the scutching of flax, in the South and West, with a view to increase the employment of the poor, have proved unsatisfactory, owing to the inefficiency of the workers, and the great expense of the operation. Your Committee have, therefore, urged on all landed proprietors who are desirous of establishing flax culture on their estates, the absolute necessity of putting up scutching machinery, in order that their tenants' flax might be prepared in the cheapest and most effectual manner. As the impoverished state of the tenant farmers, consequent upon the repeated potato blight, and the low price of farm produce, has seriously affected the means of a large section of landed proprietors, many of the latter who are desirous of affording every facility to their tenants for the cultivation of flax, are unable to afford the outlay involved by the erection of scutching mills and steeping concerns. Your Committee have reason to believe that, if the provisions of the Land Improvement Advances Act, of last Session, were extended, by an interpretation of the clause empowering landlords to borrow from the treasury for the erection of farm buildings, so as to include the buildings and apparatus for steeping and scutching flax, many would at once avail themselves of this power. A representation to this effect was made to Government, and the subject was brought forward in the House of Commons, but the Chancellor of the Exchequer, acting on erroneous information, declined to accede to the proposal. Nevertheless, your Committee have not lost sight of the matter, and they have some hopes, next Session, of obtaining a more favourable consideration. They believe that men of business would often be found ready to undertake the steeping and scutching on a large scale, if they could rent concerns from the landlords, as has already been done in one instance, their outlay being thus confined to the floating capital required for the purchase of flax, &c., without, obliging them to expend a large sum in plant, before commencing operations, and thus increasing their risk; and it is probable that capitalists would readily advance money on the security of the concerns. In addition to the metal rollers, introduced a few years since, which have been found by far the best for bruising the flax stems and preparing them for being steeped, a new machine, invented by a Belgian, to which reference was made in last year's report, has since been improved, and, from the trials made in some concerns where it has been employed, promises to be a valuable implement, both as to economy and efficiency. As it does away with the necessity of employing trained scutchers at high wages, and can be worked by women or lads, it effects an immense saving in wages, while, from the quantity of work which it will turn out, it promises to clean flax at less cost than anything hitherto tried.

Within the last few weeks, another machine has been brought under the notice of your Committee, by the inventor, Mr. Plummer, of Newcastle-on-Tyne, which is of novel construction, brushes being employed in place of the usual blades. When its merits have been fully tested, the results will be made known to the public.

SALE OF FLAX FIBRE.

Frequent inquiries are made by flax growers in the Southern and Western Provinces, as to the best mode of disposing of the fibre. This point is of considerable importance. The absence of regular markets for flax, except in Ulster, seems, to the small growers, an insuperable objection to the cultivation of the crop. Your Committee have suggested to landed proprietors that they should assist their tenants in bringing the produce to the seats of consumption, by collecting it together, and forwarding it to a commission agent, in any of the great flax marts who, for a very small per centage, would obtain the highest market price for it. It was chiefly by adopting this plan that Sir Richard O'Donnell succeeded in establishing the growth of the crop so extensively in County Mayo. It must be admitted that considerable trouble is entailed; but your Committee consider that, if landlords are not prepared to take some pains, at first, in establishing a branch of agriculture which will so materially advance their own interests, they had better not enter upon the undertaking at all. And it is further to be remarked, that, by purchasing the flax from their tenants, at a fair valuation, some landlords have been enabled to collect rents which they would otherwise have had much difficulty in getting in. These observations have reference only to the sale of flax steeped and prepared on the old system, by individual farmers. In most cases, where a steeping concern is established, a market is at once available, as it is likely that the great majority of these establishments will be conducted by persons purchasing and working the flax for their own profit. Should it be found necessary or desirable, when the time arrives that flax shall be grown pretty generally over the South, there is no doubt that, by fixing upon a few days at intervals in each season, and selecting one chief town in every flax-growing locality, so arranged that both buyers and sellers can avail themselves of the extensive system of railroad communication, now rapidly approaching completion, a sufficient attendance of purchasers from Ulster and from Great Britain would be ensured. It has sometimes been alleged, as an objection to cultivating flax in remote districts, that the distance is great to the seats of consumption, and that, therefore, the expense of transport must deduct materially from the profits of the producer. To this your Committee would reply that, through steam communication, Cork, Limerick, and Galway will soon be within a day's journey of Belfast or Liverpool; and that the cost of transporting the produce of an acre of flax—a valuable article, of small bulk—is less than one-fifth of what grain would cost to bring it to the English or Scotch market. When it is considered that flax is brought all the way from Holland and Belgium, from Egypt and Russia, and that, in the latter country, it has to be transported hundreds of miles down the great rivers to the seaboard—while, for six months of the year, the ocean presents an icy barrier to all navigation, the objections above referred to appear quite puerile.

FLAX CULTURE ABROAD.

Since the formation of this Society, its labours have attracted considerable attention in other flax-growing countries, as well as in those where it is believed that the production of a raw material, in such extensive use, could be profitably introduced. Information has been sought from the Society at different times and by numerous parties from Russia, Belgium, France, Germany, Denmark, Italy, the United States of America, Egypt, Mexico, the Azores, and the British colonies of Australia, New Zealand, and North America. Improved machinery has been purchased in Belfast for Egypt, Germany, Denmark, and France, and persons from the North of Ireland have been privately engaged to instruct flax-growers in several parts of the world. In acknowledging the advantages which the Society has derived from the practical hints afforded to its agriculturists in those countries of the continent where the flax crop is most carefully cultivated, your Committee have always, in their turn, freely accorded the information required. They feel that an honourable rivalry in the march of improvement cannot but prove advantageous to Ireland, and that the efforts making elsewhere are the best incentives to continued exertion at home. Conscious that Ireland possesses advantages for the production of flax, equalled by few other lands, and excelled by none, they are satisfied that, with proper care and diligence, she may distance all her competitors in this department of industry. The Governments of different States have instituted special inquiries into the plans carried out in Ireland by the Society. The culture and manufacture of flax are watched over with a jealous eye, by the Government of Belgium, as one of the chief resources of that country; the Russian and Prussian Governments have lately sought information on the subject; and, within the present year an eminent French chemist came to Ireland on a special mission to investigate the question, the result of his researches was reported to the Minister of Agriculture and Commerce, and in his last Message, the President of the French Republic makes special reference to the measures which he proposes to introduce, with a view to encourage the extension of flax cultivation in France. In the presence of these facts, it becomes a duty incumbent on our own Government to aid, by every means in its power, the exertions which this Society is making, already with so much success, and promising so much future advantage to Ireland.

INCREASED CONSUMPTION OF FLAX.

When this Society was founded, in 1841, the Irish flax-spinning trade consisted of about 250,000 spindles. With the increase which has since taken place, and that now making, nearly 390,000 spindles will be in operation next year. The consumption of flax in the Irish factories, in 1841, was estimated at 16,000 tons; on the same data it will be, next year, about 25,000, being an increase of 9,000 tons. Taking 5 cwt. of flax as the average produce per Statute acre, this increase would alone require an additional breadth of 36,000 acres, being more than one-half of the entire Irish growth, while, to supply the Irish flax-spinners would take 100,000 acres, being 30,000 more than the present average sowing. To extend the comparison over the United Kingdom, we find that while the import of foreign flax in the years 1840, 1841, and 1842, averaged, annually, 62,500 tons, in 1848, 1849, and 1850, to the 10th of October in each year, it averaged 83,800, an increase of 21,300 tons, that increase alone being nearly equal to the production of 84,600 acres. If, therefore, the large extent of the imports of foreign flax was dwelt upon in 1841, when the Society was formed, it is evident that the arguments in favour of increasing the extent of flax cultivation in Ireland are strengthened precisely in the ratio of the increase which has since taken place. Your Committee would beg your attention to a fact which cannot be too frequently enforced on public attention, viz., that while Ireland, at present, produces only about 60,000 acres of flax, to supply the existing demand, in the United Kingdom, for the different products of the crop, nearly 500,000 acres would be annually required; and also, that, with the exception of a small proportion of the finer flaxes of Belgium, the entire of the foreign import could be replaced with Irish, to the great advantage of the linen trade, from the superiority of the latter. Nor, in the event of a greatly-increased production of flax in Ireland, is the market limited to the quantity required by the British Isles, for France, Belgium, Spain, the United States of America, and other countries, might be calculated upon, as customers, to a considerable extent.

FUTURE PROSPECTS.

Ten years having now elapsed since the Society was founded, your Committee may be permitted to review the position which has been attained by it, and the prospects of final success which the present aspect of affairs places before them. Contending, at its outset, with lukewarm support or open opposition, it has succeeded, by an undeviating adherence to its original principles, in gradually gaining the suffrages of all who are interested in the development of that great industrial resource to which it has applied itself. It now counts a large body of members, including the leading landed proprietors of the country, the chief flax-spinners and linen manufacturers of Ireland, and many flax-spinners in the sister kingdoms. It has been honoured with the patronage of the Queen and her illustrious consort, to whom, last year, it exhibited the varied products of our staple industry, and who have been pleased to express themselves warmly interested in the success of its labours. It has been favoured with the counsel and support of that excellent nobleman, her Majesty's representative in Ireland. Since his appointment to the Viceroyalty, his Excellency has been a constant and zealous friend to the Society, having at once recognised the great importance of its objects; and the increased weight, which the peculiar circumstances under which Ireland has since been placed, have added to them. Besides the Treasury grants which he has obtained in aid of the Society, and without which it would have been impossible for it to have carried out its views in many districts of the West and South, his

Excellency has been an earnest and persevering advocate, whenever opportunity offered, of the great advantages to be derived from an extension of flax culture in Ireland. It was, therefore, with feelings of peculiar satisfaction that your Committee had the honour to receive him in Belfast, in Sept. last, and to conduct him to some large establishments where the different processes of manufacture are carried on. They also presented his Excellency with an address, his reply to which was highly characteristic of the clear and statesmanlike views that have induced him to take so lively an interest in the progress of Irish flax culture and manufacture. The reception which he met with from the inhabitants of Belfast, and more especially from those who are connected with the various departments of our great staple industry, was strikingly illustrative of the respectful homage which must ever be rendered to men who have rightly conceived the duties of their high station, in labouring to render their power and influence conducive to the furtherance of social and industrial progress. His Excellency's visit to Belfast was also productive of much advantage in directing public attention more forcibly to the exertions of the Society, and the large consumption of flax in the Irish linen manufacture.

It has been already stated that the Society has attracted the attention of the Governments of several foreign States, who have gladly availed themselves of the results of its experience.

After ten years of unremitting exertions, during which it has accomplished much good, it can now look forward with a sanguine hope of seeing all its ends accomplished. The dissemination throughout Ireland of that information on flax culture which it has been at so much pains to collect, and the practical teachings of its trained instructors, in almost every County, were so far successful as to excite a general interest in the question, and, in many instances, to lay a firm foundation for more extended operations in future. The repeal of the Corn Laws further tended to stimulate the culture of flax by withdrawing the premium on the growth of grain crops, and placing them in the same category as the former, which has, for years back, been unprotected. It thus became manifest that, if the farmers of Ulster found it to their advantage to cultivate flax at a time when the prices of home-grown grain were kept up by the protection accorded to it, Irish farmers generally must benefit by resorting to flax when that protection was withdrawn. The repeated failure of the potato necessitated the cultivation of new crops to supply its place, and flax presented the advantage of enabling the farmer to pay his rent and taxes with its proceeds, and to reserve his grain and roots for the support of his family and his cattle. The failure of the wheat crop, this year, through a great portion of the Southern districts, and the feeling that, in the face of a free import from abroad, it will not, in future, be profitable to cultivate the crop except on soils and in localities of the island particularly suited by nature for its production, has induced an inquiry as to whether flax may not be often substituted for it where it has ceased to be remunerative; and as the entire breadth of wheat in Ireland, in 1849, was but 687,000 acres, while evidence has been already brought forward in this report to prove that a demand for the growth of 500,000 acres of flax exists, there can be little doubt of the propriety of at once rendering the latter available. The combined action of these causes has led to a gradual recognition of flax culture as one of the great mainstays, in future, of the Irish farmer, and, at the present moment, the improvement in the steeping and scutching operations, and the great and increasing demand, at advanced prices, for the fibre, have materially aided in encouraging the immediate introduction of this valuable plant, on an extensive scale, throughout Ireland. The landed proprietors and farmers have met, in different localities, to discuss the subject; and a local organisation has been formed in many of them, among which may be particularised County Louth; Portlaw, in County Waterford; County Carlow; Kilkenny, Inistioge, and Callan, in County Kilkenny; Midleton, in County Cork; Tullamore, in County Westmeath; Roscrea, in King's County; and Nenagh, in County Tipperary. These localities, and many others, have put themselves in communication with the Society, and have applied for the services of its agriculturists, to instruct them in the growth of next year's crop. Flaxseed from Riga has been brought into some of the chief Southern ports; scutch mills and steeping concerns are about to be established in many places; and there is every prospect of a large breadth of flax being cultivated in most of the Southern and Western Counties next year, which, if well managed and properly prepared for sale, must lead to a steady increase, year after year, until the crop is grown on all suitable soils, as a regular part of the farming rotation.

With these statements your Committee now conclude their report. They cannot doubt that they must prove gratifying to you, and they feel that to the Government and the public they will be equally satisfactory, in the cheering evidence which they afford of a long-neglected resource being at last about to be made available. That Ireland has largely participated in the distribution of natural sources of wealth with which Providence has endowed each region of the earth, is universally admitted; and it must be equally apparent that, among those which have fallen to her share, none is of greater interest and importance than the flax plant, furnishing as it does a twofold product—in the seed, which is one of the most nutritious articles of food for cattle, whose flesh constitutes so large an item in the sustentation of man—and in the fibre, which constitutes the raw material of a great and increasing branch of national manufacture, employing some hundreds of thousands of the Irish population. The flax plant, therefore, unites the interests of agriculture, manufactures, and commerce; and, as the first step and sure foundation of this industrial edifice, its extended cultivation demands the best energies of all who would wish to see Ireland prosperous and her people happy.

From the statement of accounts, from 31st Oct., 1849, to the same date this year, it appeared that there was a balance from last year of 162*l.* 5s 5d; amount since received, 1,488*l.* 14s 0d ; total, 1,650*l.* 19s 5d ; expenditure 1,285*l.* 14s 8d ; balance, 365*l.* 4s 11d.

Mr. Shafto Adair, M.P., in rising to submit the resolution that he had the honour of being entrusted with, hoped he might be permitted to congratulate the meeting on the very remarkable document just read to them by the very intelligent and indefatigable Secretary of the Society. (Hear, hear.) He called it most satisfactory, and also most remarkable. With regard to the first assertion, gentlemen who had followed the details and figures in the report, into which he need not again enter, had received assurance that it was satisfactory, so far as the progress of the Society was concerned. (Hear, hear.) Indeed, the progress of the Society for the last ten years must be considered most satisfactory. He thought that the document was very remarkable—perhaps one of the most remarkable, as affecting any branch of industry, ever read before any Society engaged in promoting the objects of that industry; and certainly of the highest importance as connected with the branch of trade that most closely affected the interest of capitalists in this town, or of the operatives and farmers in the Province; and it had also a wide, direct, and powerful influence on the general interests of Ireland. With regard to the success which had attended the proceedings of the Society during the last ten years, he must confess that when he heard the rational, he would say the statesmanlike, reasons on which the proceedings of the Society had been founded, he was not surprised at their satisfactory result. He found that the Society, undertaken, as their Secretary had told them, under circumstances of great disadvantage, having powerful competitors in other portions of the industrial world of Europe, had carried on its operations gradually, slowly, but with a continual increase, arriving at last at that point of success that it was not only able to meet, without hesitation, all competitors in the open field, but, what was better far, that it did not hesitate to communicate to those very competitors such improvements as, in the course of their progress, this branch of industry had shewn itself capable of. Therein it had exhibited that spirit of self-reliance which made all industry prosperous. (Hear, hear.) With regard to the means adopted to make the preparation of flax more convenient for the purposes of trade, much, he thought, was due to those who had so indefatigably and carefully watched every project for this purpose submitted to their consideration. Schenck's patent had, as they learned from the report, been already of the greatest advantage in this way; but the Society was not content to stop with it, for they would proceed carefully to examine every project submitted to them, with a view to adopting and perpetuating such modifications as might appear feasible. Although he would not venture to detain the meeting by statistics, yet there were two points to which he thought reference might not improperly be made—(hear, hear)—he referred to the statistical disproportion between the number of acres now under flax cultivation in this country, and the number that might profitably be cultivated for that purpose. That was a point that concerned Ireland as a nation. The great proportion of her people must ever be occupied in the cultivation of the soil. It was the natural tendency, or, so to speak, the destiny, of the larger proportion of the inhabitants of this island—though, with the advantage, as here, of a vicinity to the highway of nations, with the particular bent and genius of the people of this country, trained to industrial pursuits, they might find an exception to the general law that must obtain in Ireland—that they must be agricultural; yet it was particularly happy to find that that industry which was employed in mercantile operations was peculiarly applied to that branch of manufacture—namely, linen, the raw material of which could be supplied from other portions of the country. With regard to the development of the spinning trade in this Province, it was most remarkably gratifying to find that, within the last ten years, according to the rough calculation which he had made, that trade had increased sixty per cent. What encouragement and employment to general industry must, during that time, have been given, he need not insist upon. He trusted that the anticipations of the report would be realised, and that they would find in the increased employment given in the manufacture of the raw material, an omen of what would hereafter be also given to those who grew that raw material upon Irish soil. (Hear, and cheers.) This Society, though established in this town, and carried on principally by the genius, and activity, and support of the inhabitants of Ulster, still had extended its operations far beyond the limits of this town or this Province, and he was sure that it was a matter of general congratulation that it had done so. It was of importance that the linen trade should flourish, not only with regard to the interests of Belfast and of Ulster generally, but to those other portions of Ireland whose agriculture had been struck down with even a more disastrous and fatal blow than in their own Province. Agriculture, he trusted, was about to be revived, and would certainly be revived with greater effect, if in connexion with such scientific operations as the cultivation of flax required. Their Noble Chairman had given them a hint in season in regard to their anticipations as to the future prospects of the flax crop. They all knew that when a new branch of industry was discovered, the prices that rewarded that branch of industry were, so to speak, disproportionately large. Numbers were introduced into the trade, and prices consequently fell; but that could be no cause for discouragement to those who undertook such operations with prudence and management. He was sure that the advice which their Chairman had given, based as it was on the practical knowledge of himself and others, would have the best possible effect. (Hear, hear.) He trusted that neither a spirit of speculation nor a spirit of discouragement would be permitted to interfere with that great effort which had now been begun, and the foundation of which, he hoped, was extending throughout Ireland to such an extent as to supply the industry of this Province with the raw material it demanded for its exercise, and so bring together into one common and united interest North and South—trading, commercial, and agricultural Ireland. (Hear, hear.) The Hon. Gentleman concluded by moving the first resolution.

Mr. Tennent, M.P., had been requested, since entering the room, to second the resolution, which he did with much pleasure. It would be superfluous for him, especially after the able speech of his Hon. friend, to do more than to express the gratification with which, in common he was sure with all present, he had heard a report which gave so favourable a view of the position and prospects of the Society. After much difficulty, and many obstacles, it had at last attained a position in public estimation, as one of the most useful and successful Associations ever formed in Ireland. (Hear, hear.) It appeared to him, that, at last, that difficulty and those obstacles had been in a great measure removed or overcome; and that, encouraging as had been the success already achieved, they were warranted in anticipating a much moro rapid and effective development of the Society's operations in future. (Hear, hear.) But, however that might be, the Society could not be deprived of the merit of what it had already done—no doubt, from motives, in some degree, interested, but from motives of enlightened and generous self-interest—for self-interest when enlightened is generous—in contributing to alleviate the calamities of several calamitous years—in pointing out a means by which the now inevitable transition from one system of agriculture to another might be more easily accomplished, and perhaps, more than all, in setting an example of bringing to bear sound practical sense, judicious enterprise, and steady industrial development, as the safe and sure, perhaps the only safe and sure means, of remedying the social evils of Ireland. (Great cheering.)

The Lord Bishop of DOWN and CONNOR and DROMORE said that the resolution placed in his hands to propose was one particularly gratifying to himself, but which would recommend itself to their notice upon much higher and stronger grounds than any he could urge. When he stated that it was his privilege to propose a vote of thanks to his Excellency the Lord Lieutenant for his fostering care and unceasing activity to promote the objects of the Society, he felt that he carried with him all their sympathies and all their entire support. (Hear, hear, and applause.) For, when the record of the acts of Ireland's Viceroys should become a matter of history, and the passions and prejudices of the day would have passed away, the name and the Administration of the Earl of Clarendon would stand prominently forward, and his Lordship would be recognised as the patron, promoter, and encourager of Ireland's arts, science, and manufactures. It was not his own individual opinion that the Society had the warm sympathy, and the earnest zeal, of his Excellency the Lord Lieutenant, in promoting and encouraging the Society; for the report, so lately read, informed them that, through his influence, 3,000*l.* had been procured from her Majesty's Treasury, to extend and promote the cultivation of that crop, which had raised this Province so high among the Provinces of Ireland. Nor, did he stand forth, on this occasion, to be the exponent of his Excellency's views. They were recorded in the journals of the Society; and, in that able answer which he had given to the address, presented to him by the Society, on the occasion of his recent visit to this town. He felt that he need not occupy their time in enlarging on the resolution; and it was sufficient ground, why it should receive their support, when he simply moved the resolution, which was gratifying to himself, and which he was sure they would all heartily respond to. (Hear, hear.)

Mr. W. **Sharman Crawford**, M.P., said he had great pleasure in seconding the resolution which had been proposed by the Noble Lord the Bishop of Down. He felt that this Society was deeply indebted to his Excellency the Lord Lieutenant for the support and countenance which he had given to it; not only for the grants which he had been the means of obtaining for the Society, but also for that support which he had extended in the way of expressing his opinion of its usefulness. The opinion of the Lord Lieutenant, as expressed in the answer which he had prepared to the address submitted on the occasion of his Excellency's visit, had, no doubt, great influence in promoting the interests of the Society, and in increasing the amount of support which had been extended to its efforts heretofore. But, notwithstanding this increase of support, for which the Society was indebted to his Excellency, they should not forget that the Society must rely on its own efforts and exertions mainly. (Hear, hear.) They must not forget that this was the only true basis on which they could depend for the prosperity and success of the undertaking. The report, which had just been read, afforded them a strong stimulant to exertion; and, while it recorded their successes, also indicated the necessity for future exertion. It appeared from that report, that the increase of the flax manufactured, during the last ten years, had been from 16,000 to 25,000 tons; and that it required 30,000 additional acres of land to be cultivated for the crop, to be sufficient to meet such an increase; while, in order to supply the demand for the United Kingdom, it would not be less than 500,000 acres. Considering that we had only, in the year 1849, 16,000 acres, he would ask whether it was not necessary to exert themselves, so that they might not only be able to meet the demands of the manufacturers of this country, but also those of the United Kingdom? (Hear.) Ireland was capable of doing this. (Hear.) When he considered the number of acres in Ireland, he found that the entire number under cultivation was 14,000,000, and there were still 4,000,000 of what might be called waste land, a great proportion of which was peculiarly valuable for the cultivation of the flax crop. (Hear.) There was no crop which could be sown which would pay the cultivator so speedily for the reclamation; for bog lands, when properly drained and manured, seemed to be particularly adapted for that species of crop. And, if there were but 15,000,000 of acres applicable for such culture, one-thirtieth of them would be sufficient for the supply of the whole linen trade of the United Kingdom. (Hear.) Thus would Ireland be found to be capable of producing sufficient of the raw material to supply the whole trade: and why should we not rely upon our own country instead of depending upon a foreign supply—(hear, hear)—particularly when our own soil might be made to produce it under such advantageous circumstances? (Hear, hear.) But, at the same time, he fully agreed with their Noble Chairman in urging that the cultivation of flax must be cautiously advanced, for unless the cultivation of the soil be properly conducted in other respects, the flax culture would fail. Flax could only be cultivated properly when it was brought into its own place in judicious rotation. (Hear.) It was too often sought to propagate it in the same soil; and their efforts should be directed, as a part of the flax cultivation, to the general improvement of the system of farming—to give an impetus to industry, and instruction to the people, in the proper modes of husbandry. Thus it was that the objects of that Society connected themselves with the most extensive industry, as applied to general management of the soil. It was now a matter of deep importance to promote the cultivation of this crop, as he was decidedly of opinion that, if judiciously carried on, it was the most rent-paying crop which the land could possibly produce. (Applause.) In consequence of the depression in the value of corn, flax had become the great object to which the farmer must look for the payment of his rent; and when they further considered the present circumstances of the cotton trade—the diminution in the supply of cotton—and the possibility that the use of the article of flax may be so extended as to form the principal fabric of wear by the community, if that supply should continue short, it became a matter of deeper and still graver importance, and afforded an additional stimulus for its production. (Hear, hear.) The report went on to say that the Society had gradually arisen to the prosperous circumstances in which it was now placed, under luke-warm support or open opposition. There never was anything more true than that paragraph; and, as a landed proprietor standing there, he felt that he would not be doing justice to the exertions of the manufacturing interests of Belfast, if he did not declare that the prosperity of the Society had chiefly arisen from the untiring exertions of a number of gentlemen of this town. (Hear, hear.) There was something more than money or mere subscribers wanted to promote the prosperity of a Society; and the commercial gentlemen to whom he had referred had given their attention to the management of its affairs, and it was to this cause he mainly attributed its prosperity. (Hear, hear.) He must confess that it had not received, in past times, that degree of support from the landed interest, to which it was entitled at their hands. He trusted, however, that a new era had now appeared; and, from the attendance he saw there that day, it gave him that prospect. He hoped that the Society would now prosper—that it would go on in the steps which it had hitherto proceeded in—and that all interested in it would have the satisfaction and gratification of observing its successful results in the increasing prosperity and improvement of Ireland. (Applause.) It was also true they were indebted to the Lord Lieutenant for the support—the enthusiastic support, he might call it—which he had accorded to that Society; and, whatever differences there might be with regard to the political courses of the Government, he was quite sure that all who heard him, of whatever political party, were deeply indebted to him for the support which he had afforded them in carrying out the important objects of the Society. (Cheers.) He would conclude by seconding the resolution.

Lord **Dufferin** said that the resolution he had the honour of being entrusted with was one that he was sure no words of his were needed to induce them to adopt. Having read the resolution, he said he was perfectly convinced that there never had been a Society established in Ireland likely to be more useful than this Flax Society; and he was also perfectly certain that never had any Society a body of gentlemen more qualified judiciously to carry out its objects than the gentlemen who formed the Committee of the Flax Society. He could not help expressing his perfect concurrence in what had fallen from Mr. Crawford, that the thanks of the Society were eminently due to those members in this town who had so heartily aided in carrying out the objects of the Society. He would not occupy their time further, as he hoped they would hear some practical observations on the cultivation of flax. (Hear, hear.)

Mr. Birney (of Lisburn) had great pleasure in seconding the resolution; because, among other things, he knew the proper working of any Society depended entirely upon the Committee, and the active exertions of those to whom its management was entrusted; and no Society owed more to the untiring and zealous exertions of its Committee than their own. (Hear.) As they were all aware of the nature and extent of these exertions, he would not feel himself at liberty to trespass at any length upon their time, save only so far as it would be necessary for him to mention a few facts which might be conducive to the good of the Society, and to the interests of the public at large. (Hear.) For the last nineteen or twenty years, he had had the management of a property in the County Tyrone; and, during that time, he had taken some pains to impress upon the tenantry the propriety of growing flax. He had succeeded to a pretty large extent, particularly in the years 1848, 1849, and 1850. In these years, as he had remarked, the growth of flax upon the property had largely extended, and the consequence was, that the rents were well paid up to the present—the landlord was satisfied, and the tenants were happy and comfortable. (Hear.) As an inducement to the tenants, he had gone to some pains to compile a few facts which bore upon the question of the value of the crop, and which statement he believed was perfectly accurate. These calculations were based upon the Irish acre—for, although he now lived in a district of the County Antrim where the English acre was more in use, he was more conversant with the Irish acre—(a laugh)—and hence upon that measure his statement was based. He believed he was pretty correct in stating that about 16 pecks of flax was the proper quantity to set down for the Irish acre; each peck should produce from four to five stone of dressed flax—say four and a-half stone, which would make seventy-two stones to the acre. This, sold at 6s a stone, would produce 21*l*. 12s. He would now proceed to shew the cost per acre:—Rent per acre, 1*l*. 8s; County cess, 2s 6d; poor rate, 1s; 16 pecks of seed, at 2s 11d per peck, 2*l*. 6s 8d; horse labour, twice ploughed and harrowed—say four days at 6s 8d—1*l*. 6s 8d; total, 5*l*. 4s 10d. Taking the whole cost from the amount produced by the flax, the balance would be found to be 16*l*. 7s 2d. (Hear, hear.) He would merely mention these facts with a view to urge upon landlords particularly that it was their duty to impress upon their tenantry the peculiar advantages of flax cultivation. The sum he had mentioned—namely, 16*l*. 7s 2d—was what might, under average circumstances, be made of a single Irish acre of flax, produced by the outlay he had mentioned, together with the labour of the farmer and his family.* He thought the best way—and it was the course he had himself adopted—was for the landlord to go into the market and purchase the seed, where there would be no danger that it would be of such a kind as to run any risk of having a rotten or a bad crop. (Hear, hear.) These were advantages which he thought ought to be prominently brought forward before the tenantry of the country, in order that they might be fully aware of the advantages accruing from a judicious cultivation of the flax crop. (Hear, hear, and cheers.) He was sorry for having been obliged to trespass so long upon the meeting; but he thought that these facts, being of a statistical nature, and having been compiled with all possible accuracy, might be of some interest to that meeting. (Hear, hear.) If they were right, the profit on an Irish acre, at ordinary wages and ordinary cost, would be 16*l.* 7s 2d, after deducting all charges. He himself had met some little opposition, and some of the tenants had seemed to be afraid—urging that they could not eat the crop. "Very well," he had replied, "although you cannot eat it, yet, if you sow one acre of flax, it will buy three acres of oats when you sell it." (Hear.) In conclusion, he had great pleasure in seconding the resolution which had been proposed by Lord Dufferin.

Mr. J. S. Crawford said, before the resolution was put, he was desirous to lay before the meeting the substance of a letter which had been received that morning from Mr. William Dawson, of Bessbrook, relative to the profits of raising flax crops, in corroboration of what had just been offered:—"I send herewith an account of the management of flax by fifty-one farmers, stating every particular respecting soil, labour, &c.; and, although it has been acknowledged by all to have been a very unfavourable season for the crop, thou wilt observe that the average gain has been 7*l.* 1s 4d per acre."

[This table, setting forth the management and results above mentioned, was placed over the Chairman's seat, to which the attention of the meeting was directed.]

Sir R. Bateson said, he had great pleasure in submitting the next resolution for their approbation. He need hardly say that, in these short days, and with the mist that had set in, it would be very bad taste in him to trespass on their time by attempting to make a speech. They did not come there so much to listen to theories or speeches as to listen to the results of practice and to facts, so much of which he was delighted to hear from Mr. Birney just now. He (Sir R. Bateson) professed to be an ardent friend and admirer of the Society, though he must confess to a good deal of ignorance on the culture of flax; and, as the word selfishness had been used, perhaps that ignorance arose from the influence of that feeling, for his property, being on a limestone stratum, was not well calculated to grow flax, and, therefore, he did not cultivate the crop. He was delighted to see his Lordship and the other friends who had come from a distance from all parts of the country, and he had no doubt that the Society would continue to flourish and extend. He had always thought that they should not look to their own Province alone, as regarded the operations of the Society. They had been too much in the habit of separating Ireland into North and South, as if they were two different countries, and knew nothing of one another. Persons might say that a thing was all very well for Down or Antrim, but that it would not do for the South—for Tipperary or Limerick; but he was of opinion that they should conduct the Society on a large basis. (Hear.) He had always thought that not only flax, but also hemp, should be cultivated in the finer soils of Tipperary, Limerick, and Cork. Any person who had travelled through Belgium and those low countries must see at once that hemp could be cultivated in this country. [A sample of very fine hemp was here exhibited by the Secretary, and laid on the table.] That, continued the speaker, was a practical proof of what he had ventured to assert. Where was it grown? [Mr. MacAdam—In Limerick, this year.] He was happy to hear it came from a County that he had so many near and dear reasons for being attached to. He would say that the Society merited their approbation—it certainly had his warmest wishes for its success; for, independent of its other merits, it was, he believed, the only Society in Ireland in which they could all meet with hearty good-will. In it they all met as Irishmen—(loud applause)—regardless of those disputes that had so long existed between them—for the benefit of their common country.—(Applause.) Therefore, he had peculiar satisfaction in supporting it. He believed that it was the only Society in existence into which he could enter without the fear of hearing or saying anything offensive one to the other. He had set out by saying that a speech from him would be bad taste; therefore he must check himself. He had great pleasure in moving the resolution.

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* Note.—Mr. Birney's calculation means that, after deducting from the market value of the fibre the cost of rent, taxes, seed, and labour in sowing, the profit he names is left; but, out of this profit, the labour of pulling, steeping, spreading, and scutching, have to be deducted.

Mr. Shouldham, High-Sheriff of Longford, said that since the Society had conferred on him the honour of seconding the resolution, he would say a few words. The cultivation of flax in Ireland had been so much spoken of that little remained for him to say on the subject. It appeared to him that there was no obstacle to its extended growth, and it had everything as it were in its favour; no person could say that it would be in any way injurious to the country, but, on the contrary, it was, under the present circumstances, the only hope of their agriculturists. If the culture of it were carried out extensively, it would be the means of joining the agriculturist with the mechanic hand in hand, who might now congratulate each other on the large loaf; and it would give a blessing to both those classes of the community, second only to a large loaf—namely, a clean shirt. (Hear, and laughter.) He had great pleasure in seconding the resolution.

Dr. M'Kibbin then came forward to read the report subjoined; but

Mr. MacAdam said that the report was in his handwriting; and, as a man always read his own writing quicker than another would do, perhaps, as time pressed, it would be better that he should read it.

The CHAIRMAN having signified his desire that Mr. MacAdam should do so, that gentleman then read the report as follows:—

REPORT OF THE SUB-COMMITTEE APPOINTED TO INVESTIGATE SCHENCK'S PATENT SYSTEM OF STEEPING FLAX.

TO THE COMMITTEE OF THE ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

Your Sub-Committee, on the 31st July last, made a report on the results of their investigations up to that period. They do not consider it necessary, in this, their final report, to copy that document at length, but will simply embody the information it contained in the more extended matter which they are now able to lay before you. Though the Committee, from their many opportunities of inquiring into the efficacy and advantage of the late Mr. Schenck's process, since that gentleman first brought it before the notice of the Society, in 1847, were quite satisfied about it, they suspended their opinion until facts were brought forward on every point; and your Sub-Committee, in handing in the present report on the objections raised by some parties, will be able to convince you that they do not state a rashly-formed opinion of their own, but rather publish the results of experiments conducted by disinterested and competent parties.

As much of the advantage of flax culture depends on being able to economise, to the greatest extent, the crop after being grown, and to reduce the grower's trouble and hazard, whilst ensuring the greatest value, your Sub-Committee hope that their report will prove Schenck's system to realise these desirable points, and will shew that, if proper care be given to the process, something as near certainty will be attained as could be expected, and a much more steady return than by the old, slovenly, and uncertain process of watering, conducted by persons often ignorant of the commonest chemical principles, and generally attended with the loss of the seed—a most valuable part of the crop.

The doubts raised as to Schenck's process were—1st. That the yield of fibre would be less than by the ordinary mode of steeping; 2d. That flax so prepared would be weakened; and 3d. That the linen made from it would not bleach properly.

As respects the first objection, your Sub-Committee are of opinion that, either by the common process or by Schenck's, the yield of fibre will be lessened if the fermentation is allowed to go too far. The uniformity of temperature ensured by the latter would induce the belief that the yield of fibre should be increased. This is borne out by two experiments. In the one conducted at Lisburn, by Mr. Davison, in 1847, 112lbs. of flax straw, after steeping and drying in the ordinary way, gave 20lbs. of scutched fibre; and 112lbs., steeped by Schenck's process and dried, gave 24lbs. In another, tried this year, at Drimoleague, County Cork, from 112lbs. of straw, the old process gave 14lbs. 5ozs., and Schenck's, 17lbs. 11¼ozs. The increased yield in the first experiment was 20 per cent., and, in the latter, 23½ per cent., in favour of Schenck's method. As respects the quality of the fibre, the result was equally in favour of the latter system. In the first experiment, the flax steeped in the ordinary way spun to 96 lea yarn, and that by Schenck's system, to 101 lea. In the second, the ordinary gave 60 lea, and Schenck's 70. A further experiment was communicated by Messrs. Marshall & Co., of Leeds, some flax straw grown in Holland being the material employed. What was steeped in Holland, in the usual way, gave 61lbs. 1oz., hackled, to the 112lbs. of fibre; and two lots of the same straw, steeped by Schenck's system, in two different concerns, gave, respectively, 62lbs. 4ozs. and 64lbs. per cwt.; the value of the fibre, per acre, being, of the common steeped, 9*l.* 8s, and of the patent steeped, averaging 10*l.* 12s.

With respect to the second objection, that the flax might be weakened, the same remark may be made, that fermentation, conducted on a systematic and scientific plan, was not likely to weaken the fibre more than the same amount by an uncertain process. And, although the fibre might often be made *stronger* by the old plan, when the steeping was not carried far enough, yet, on the other hand, it was frequently over-steeped, and, consequently, *weakened.* In addition to the favourable report of spinners who had produced yarn from Schenck's flax, of fair strength, the following results of experiments were laid before them :—Several samples of fibre, of full strength, steeped on the patent system, in different places; samples of threads from Messrs. Marshall & Co., of Leeds, unbleached, bleached, and dyed, made from the patent steeped flax to which reference has been made, all being of good, strong quality ; a sample of 140's weft-yarn, from Messrs. S. K. Mulholland & Hinds, and a sample of boiled yarn, for heavy linens, from Messrs. Dunbar, M'Master, & Co., of Gilford. All these were considered of fair, average strength. It is evident to your Committee that flax steeped by the patent process can be made either strong or weak, it being in the power of the operator, by increasing or decreasing the time of steeping, or by raising or lowering the temperature of the water, to make whatever quality suited the market, or would best remunerate him. They submit, that *strength* is not what will be most profitable to the grower, but that *fineness of quality, with softness,* will often remunerate him much better, and his interest will be to produce what is most in demand and highest priced. At this point the duty of the Society ends; whatever will best remunerate the *grower* being what it is their duty to point out, and it is for the *spinner* to choose strong or weak, as he may require it for different customers.

As to the 3d objection, that the patent steeped flax might not bleach well, the samples of yarn, thread, lawn, and linen, produced at the present meeting, are sufficient evidence of its groundlessness. The following letter from an eminent bleaching firm is still further satisfactory :—

"*Lisburn, 28th August,* 1850.

"MESSRS. S. K. MULHOLLAND & HINDS,

"DEAR SIRS,—We have the pleasure to return, finished, the two pieces of linen made from flax steeped on Schenck's plan, which you sent us to bleach;

and, during the process, we found the advantage more decided than with the lighter fabrics you sent us, some time ago. These, with other opportunities of judging, have caused us to conclude that the general introduction of Schenck's patent process would be a step in the right direction, unless objections can be substantiated unconnected with the bleaching department of the linen trade.—Yours, very truly,

"Richardson & Co."

Thus your Sub-Committee believe that all rational objections have been satisfactorily met. The general question having now been put in a favourable position, it rests with others to pursue the details more minutely; and it is hoped that they will be careful to note and make known both improvements and sources of failure, if any arise, so that the public may benefit by the results of their experience.

Having thus disposed of the subject confided to their care, your Sub-Committee feel called upon to take some notice of another project for preparing flax fibre, inasmuch as its promoters allege it to be superior to Schenck's steeping system. They allude to Mr. Donlan's plan of separating the fibre without steeping. They are so fully aware that the Royal Flax Improvement Society have no other object than the rendering flax culture of the greatest possible advantage, that, while they discharge their duty, on the one hand, of pointing out the successful result of experiments made with a view of testing the merits of Schenck's system, on the other, they feel called upon to lay before you what they conceive to be radical defects in Donlan's proposed plan.

It is sufficiently obvious that so simple a mode of obtaining flax fibre, as its mechanical separation from the stems of the plant must have been the earliest method adopted when this substance was first used for textile purposes. It is probable that accident first made known the fact, that, by immersing the flax stems in water, when above a certain temperature, the fibre could be divested of impurities by the decomposition of the foreign matters, which, with the woody matter of the stem, are united to it. Up to the present day, no other means of obtaining a pure fibre have been devised. Weak acids, solutions of caustic potash and soda, soap ley, and lime, have all been tried, but have all been found objectionable. The attempts which are on record of different revivals of the dry process fully prove that there is nothing new in Mr. Donlan's proposal. It is known that patents have been taken out at different periods for a similar process, but they content themselves with a reference to some of the best known cases. In 1815, the Irish Linen Board adopted the dry preparation, then brought forward by Mr. Lee, and the records of that Board shew that its principle was almost identical with that now proposed by Mr. Donlan. The most sanguine expectations were entertained of it. The very arguments now used in favour of Donlan's mode were then stated —viz., that a larger yield of fibre was obtained by it, that the colouring matter was discharged by the most simple means, that greater strength was obtained, and less tow produced. The result was, that, after an expenditure of 6,000*l.* in introducing the system throughout the country, the Linen Board abandoned it, in consequence of insuperable defects. In 1816, a Mr. Pollard, of Manchester, brought forward the dry preparation system, and proposed to make an article from flax which could be spun on cotton machinery. This also fell to the ground. In France and in Belgium similar trials were made, which turned out equally unsatisfactory. Your Sub-Committee are of opinion that the fatal defect of flax fibre, separated by the dry process, consists in the retention of the gummy and albuminous matter incorporated with the fibre. This being fermented by moisture at a moderate temperature, and decomposed by alkalis and acids, is not only useless, but absolutely pernicious, if thus retained, since, in the processes of manufacture, when it necessarily undergoes the action of all these changes, it must come away. The case, therefore, as regards steeped flax and dry prepared flax, simply stands thus:—In the former state a nearly pure fibrous matter is produced, and the material is thus in the fittest state for spinning even yarn and making good linen; in the latter, along with the fibre is combined a foreign substance, which must be got rid of afterwards, to the detriment of the spun and woven products.

Although this appeared evident to the Committee, when discussion was first raised relative to Donlan's invention, yet, anxious to investigate it more fully, with the chance of finding something practicable in it, they proposed that he should bring over his apparatus to Belfast, when, in the presence of practical persons, its merits should have the most careful and impartial consideration; and, if this should result in anything satisfactory, the Society would give its influence freely in introducing it. This proposition was not complied with. The Committee then sent your Secretary to London, and forwarded some flax straw for a trial; but, although there for several days, he was unable to get a sight of Mr. Donlan or of his apparatus. On leaving London, he requested Mr. J. G. Marshall, M.P., to have the kindness to investigate the matter, and that gentleman deputed his brother to undertake it. The following letter from Mr. Arthur Marshall contains his opinion:—

"*Leeds, Nov.* 11, 1850.

"DEAR SIR,—My brother has asked me to reply to your letter about Mr. Donlan, because I have seen his process, and my brother has not seen it. We sent some straw from Patrington, both rated and unrated. The samples I saw from each of the lots were well swingled, but at what expense I did not learn. The process appears to me tedious and expensive, as far as I could judge from the small quantity that was swingled when I was there. The unrated flax was extremely coarse, and only suitable for the purposes named at your Committee meeting. I had previously advised Mr. Donlan to have some quantity swingled of the same straw, rated and unrated, and to submit the result to some flax-spinner; but I am not aware that he has done so. If he wanted to test the value of his invention, I think he cannot do better than adopt your suggestion, and bring his machinery over to Ireland. I saw quite enough to convince me that the process would not be suitable for us to adopt at Patrington. However perfect you may make the swingling, I cannot see how it is to supersede the action of fermentation, in dividing the fibres.—I remain, yours truly,

"ARTHUR MARSHALL.

"James MacAdam, Esq., jun."

On receipt of this letter, Mr. Marshall was written to for permission to make it public, and he replied as follows :—

"*Leeds, November* 25, 1850.

"DEAR SIR,—In reply to your letter, my brother and I have no objection to your communicating to the Society the views we take of Mr. Donlan's mode of treating flax straw. We sent to Mr. Donlan some flax straw from Patrington, of good average quality, part of it rated straw, and part unrated straw. I was not able to attend a meeting of gentlemen at Mr. Donlan's place, when samples of this straw were swingled, and the result published, but I called soon after, and saw the result. I also saw a small quantity swingled by one of Mr. Donlan's workpeople. The flax was certainly very fairly swingled, both that which had been rated, and the unrated straw, but I could not perceive anything new in principle in Mr. Donlan's machinery, and the process appeared to me to be tedious and expensive. This is confirmed by Mr. Donlan's printed statement, where he estimates the cost at 4*l.* 6s 8d per ton of flax straw swingled; and at the rate of two tons per acre this would be 8*l.* 13s 4d per acre, for labour only, at a low rate of wages, 1d per hour for men, and ¾d per hour for women. The quality of the unrated flax was very poor, although apparently strong; but, if the material was spun wet, I should doubt whether the yarn would be stronger than yarn from rated flax. Mr. Donlan's object appears to be to produce a strong, coarse article, for manufacturing into sail-cloth and other fabrics of that description. Our object at Patrington being to produce flax of fine quality, which we consider the more profitable of the two, Mr. Donlan's plan appeared unsuitable for our purpose, and we thought no more about it. As to the plan of bleaching the flax fibre, and producing a substitute for cotton, we do not know anything about it, but it is not a new idea, and we should expect, from the result of former experiments, that, owing to the great difference between flax and cotton fibres, however the flax may be managed, the cloth produced will still be very different from cotton cloth. It is very important, however, that the matter should be thoroughly investigated, by competent judges, because the announcement of such a plan tends to unsettle the minds of parties who are disposed to erect steeping concerns. We ourselves, however, have not been deterred, by this cause, from carrying out an extension we had begun of hot-water steeping vats at Patrington.—I remain, your obedient servant,

"ARTHUR MARSHALL.

"James MacAdam, jun., Esq."

In August, Mr. Price exhibited to the Committee a collection of samples illustrating Donlan's processes. One series shewed the flax fibre as separated by the dry mode, some tow from the same, and some coarse fabrics made from it. The fibre appeared coarse, harsh, and wiry, deficient in spinning quality, but very strong. It was considered value for about 30*l.* per ton, and suitable for ropes, canvass, rick-covers, &c., especially if these fabrics were pitched or oiled, so as to prevent the action of air and moisture on the foreign matter with which the fibres are incorporated. The tow, valued by Mr. Price at 84*l.* per ton, was considered worth not more than 28*l.* The other series of samples consisted of flax fibre, partially or wholly bleached; and of thread and linen alleged to have been made from it. A considerable improvement was manifest in these specimens, evidently owing to the foreign matters having been partly got rid of by chemical means. Still, none of them appeared to possess that softness and mellowness which steeped flax, simply scutched and hackled, when of fair quality, displays. The Committee were rather disposed to consider these samples as curious and interesting, than as likely to be useful, since it has long been an admitted axiom that the bleaching process cannot be so judiciously employed on the flax fibre, or even on yarn, as on the woven fabric. Many persons have experimented on the bleaching of fibre; and the Committee are in possession of samples much more lustrous and silky than any Mr. Donlan has shewn, but no practical end can be attained by their employment. Within the last week, some flax straw has been prepared near Belfast, part of it by steeping, and part by the dry process. The samples are before you, to shew for themselves, the steeped lot being more than double the value of the other.

Having thus reviewed the products of Mr. Donlan's so-called discovery, your Sub-Committee would add a few notes on the paragraphs which have lately appeared in *The Morning Chronicle* in support of this project. In so doing, they must express their decided opinion that the author of these articles is extremely ignorant of almost all the circumstances connected with the culture and manufacture of flax. In fact, this ignorance is so constantly apparent, that to take up the errors *seriatim* would require a separate report. Your Committee's remarks must be, therefore, confined to a few of the most prominent:—1st. It is stated that Donlan's process (unlike all previous plans) is simply effected by mechanical means. Now, it is a well-known fact that Lee's process and others were effected by mechanism only. 2d. It is stated that the dry process retains all the oleaginous properties of the flax, and is, therefore, superior to the steeping system. The very reverse is the case, as dry-prepared flax is rough and harsh, while steeped flax is soft and mellow. 3d. It is stated that flax fibre is injured by steeping, and receives various impurities. Now, steeping is the only mode of getting the fibre *free* from the impurity which the dry process retains. 4th. By steeping, flax is deteriorated in value. As a proof of the contrary, none of Mr. Donlan's flax has been valued at more than 30*l.* per ton, while good steeped flax averages 50*l.*, and often reaches 80*l.*, per ton. 5th. Kiln-drying is named as a usual process, whereas it is well known that, except in a few localities, it is now never employed. 6th. The *shoves*, or woody refuse of the stems, are recommended for cattle, while science and practice have both proved them utterly valueless for such a purpose, and they are with difficulty made available even for manure.

7th. Saturation of the seed in a chemical solution is alleged to increase the fibrous part of the plant. So small a portion as the seed would imbibe could scarcely be expected to act sensibly on the constitution of the plant; and the husk of flaxseed is known to be impervious to liquids, so that, however its exterior might be affected, the kernel, which contains the germinating principle, would remain intact.

But all these errors sink into insignificance, compared with the calculation that 100,000 acres of dry-prepared fibre would give 2,800,000*l.* more value of fibre than the same quantity steeped. Even granting the correctness of the allegation, that double the produce of dry-prepared flax could be obtained from the straw, it is evident that, since the former is valued, by competent judges, at 30*l.* per ton, while the latter, as steeped on Schenck's system, has actually averaged nearly 60*l.* per ton in the Belfast market, this assumed advantage is at once negatived—the value remaining almost precisely equal. And, while the latter could be applied to all the purposes of manufacture, the former could only be used for a few.

Your Sub-Committee do not deem it necessary to enter further into this inquiry. Sufficient evidence has been given of the entire want of solidity in the basis on which such flourishing, and, to persons ignorant of the subject, such plausible anticipations have been erected.

They will only further add, that the absence of all evidence supported by practical men, and the directly adverse testimony of the only practical person who has seen the process, should suggest the utmost caution to those whose sole means of judging are the perusal of newspaper paragraphs, or the inspection of nicely got up samples. They have entered thus fully on the subject, because they feel that the Society has a two-fold duty to perform—in making its knowledge and experience available to guard the public from disappointment and loss; and in recommending the adoption of Schenck's steeping system to all who are interested in promoting the growth of flax, as having stood the test, after being subjected to a severe examination. They consider that it would be most unfortunate for the country if this more than doubtful project of Mr. Donlan should divert attention from it. While your Sub-Committee would most sincerely rejoice to find their unfavourable opinion of the latter incorrect, they feel it a paramount duty to issue a timely caution, both to flax-growers and to the promoters of the scheme, that the first-named may not rely too strongly on plausible appearances, neglecting the substance while grasping at the shadow; and that the last-mentioned, in their over-sanguine anticipations, may be induced to consider more carefully the data on which they found their calculations.

(Signed) ROBERT M'KIBBIN, M.D.
JOHN PRESTON.
JAMES MACADAM, Jun.

Belfast, 26th November, 1850.

Dr. HODGES being called on by the Chairman, rose and said—My Lord and gentlemen, the importance of flax cultivation to the country, after much opposition from ignorance and prejudice, is, at length, fully admitted.

The question is no longer whether the growth of flax should be encouraged, but how it may be, most economically and safely, brought into the state in which it is required by the manufacturer. The sums which have been placed at the disposal of your Society, by his Excellency the Lord Lieutenant, prove that the Irish Government fully appreciate the advantages to be derived from encouraging the development of this branch of our national industry; and, in almost every State in Europe, we find that, at the present time, strenuous efforts are being made to promote flax cultivation. In Belgium, which has long been regarded as the model country of flax, we find the Government using every means still further to advance the culture of that crop, and labouring, by rewards, to encourage the flax grower. (Hear, hear, and cheers.) In 1848, the Belgian Government obtained supplies of seed from Russia, which they sold upon credit, and at cost price, to the poorer class of farmers. In France, also, you may expect to find a powerful competitor in the cultivation of the flax crop; and the late mission of M. Payen, an eminent French chemist, and his report to the Minister of Commerce and Agriculture, shews us that the Government of that country are determined to exert themselves to secure some of the advantages to be derived from an abundant home supply of the raw material of their linen manufacture. It is in Prussia, however, that we find the greatest anxiety on this subject. Many of you may not be aware that in that country, in the beginning of the present year, an Association on the plan of your Society, and under the patronage of Government, was established, to extend the culture of flax. Its head-quarters are at Berlin, and it proposes branch establishments in the Prussian Provinces, and schools for the education of young farmers in the management of flax. Several of these schools are already in operation, and, during this Summer, several persons have been sent by Government to this country, to study the various improvements that we have adopted, so as to facilitate their introduction into Germany, and thus endeavour to recover for the linen trade of that country its former position. I mention these things that you may not relax your exertions. There is another subject which, as it is closely connected with my professional duties, I wish to take the present opportunity of alluding to. The members of the Society may recollect that, at the annual meeting in 1848, I recommended a mixture of various fertilising substances as an economical means of restoring to the soil the matter taken away from it in the straw of the flax plant. I mentioned that, by applying the artificial compound, and at the same time using, as manure, the excrements of the cattle of the farm fed upon the seed of the plant, all the substances of which the plant robs the soil would be effectually restored. The mixture which I then recommended, from a careful consideration of the composition of samples of Irish flax which I had analysed, could be purchased in sufficient quantity, for the small sum of 10s 6d per acre, to replace all the materials of the straw, but not those of the seed. The receipt which I gave has been copied into various journals, both in France and Germany, and published as a complete manure for the flax plant. I am, therefore, desirous, in the present meeting, to correct this serious error, and to state distinctly that my object—as mentioned when the communication was made—was merely to shew that the alarms which at that time prevailed, as to the exhausting effects of the growth of flax, were without rational foundation, as science has given us a simple and cheap means of preserving the fertility of our soils, by replacing in them all that the straw of the plant had required for its nourishment. The new system of steeping, in many respects so advantageous to the country, however, requires that the farmer should be taught that, when the seed of the plant is not consumed as food upon the farm, the materials which it carries away to the steeping establishment should be replaced in the land by manure. Unless this be done, it is clear that flax cultivation must contribute to the deterioration of our soils. Since the period of the report to which I have alluded, several analyses of flax straw from Russia and Belgium have been published, which tend to advance our knowledge of the effect which the growth of that part of the plant exercises upon the soil. We are still, however, not in possession of a sufficient number of analyses of Irish grown flax. The analyses of Irish flax which have been published by Sir Robert Kane, and also those which have been made in my own laboratory, would lead us to conclude that the plants grown in this country do not take from the soil so large an amount of alkalies, potash, and soda, and of phosphoric acid, as appears in the ash of foreign specimens. I may be permitted to observe, that all the examinations which I have made of scutched flax, and also of the stem of the flax, before and after steeping, confirm the accuracy of the statement to which I directed the attention of your Society on a former occasion—that the steep water extracts only a portion of the inorganic or mineral matters, which had served for the development of the stem of the plant, and that it was impossible, by employing merely the water of the steep-hole as manure, to replace all that had been withdrawn from the field; and that we should imitate the experienced farmers of Belgium, by placing in the soil, by artificial means, a proper supply of materials to obviate the exhausting effects which the cultivators of the plant would otherwise inevitably produce. It is, I conceive, the duty of this Society, whilst labouring to extend the culture of the crop, to point out to the farmer how he may repair, by manure, its effects upon his fields, so that the produce of our ordinary food-producing crops may, as is at present witnessed in Belgium, be increased and not diminished by the progress of flax cultivation. In connexion with the questions which at present occupy the attention of the Society with respect to the economy of the various methods of steeping now followed in this country, I have much pleasure in being able to bring before the meeting the results of some experiments lately made in Germany, for the purpose of ascertaining the comparative value of the old and new methods. These experiments are arranged in a tabular form, and will, I think, form an interesting addition to your report:—

SCHENCK'S STEAM RETTING.

No. of sample.	Duration of steeping.	Loss.	Produce from 100lbs. of steeped flax.	Produce from 100lbs. of unsteeped flax.
1	60 hours	22 per cent.	17·54-100lbs.	14lbs.
2	60	12	14·31	12·59
3	96 & 60	26⅝	17·07	12·57
4	157	26	15·33	11·34
5	157 & 60	26	12·12	8·96
6	72	25	15·34	11·50
7	258	23	17·38	13·38
8	70½	8⅝	13·43	
9	68	14·64	14·45	
10	68	10	17·09	

COLD WATER RETTING.

No. of sample.	Duration of steeping.	Loss.	Produce from 100lbs. of steeped flax.	Produce from 100lbs. unsteeped flax.
1	480 hours	14½ per cent.	14·33-100lbs.	12·43lbs.
2	480	25	9	6·75
3				
4	552	25	14·81	11·10
5	768	25	9·50	7·12
6	648	25	12·75	9·56
7	888	25	16·43	12·32
8	800	unknown.	12·71	

It was also found that, on an average, 1,200lbs. of flax-straw afforded by the steam process 144lbs. of pure flax, and by the old method 118lbs. The experiments were ten in number, and were made with nine different kinds of flax. They give the duration of the steeping, the loss in steeping, and the produce of fibre both from fresh and steeped straw. They, therefore, convey precisely the kind of information at present required.

Mr. Niven, of Chrome-hill, being called on, said—My Lords and gentlemen, the Royal Flax Society have got credit for their exertions in promoting the growth as well as improving the quality of flax in all parts of Ireland. The South and West are now increasing their quantity and improving their quality, owing to the Society's labours. The Belfast spinners are good judges of the quality suitable for their purpose, and are ready to give the farmer the full value; and careful handling will pay the farmer well, since he will receive a price according to the quality, while carelessness of treatment will not pay any flax-grower. (Hear.) I know of no crop which requires more attention, first in selecting suitable soil, then in cleaning and pulverising the ground, and careful weeding of the crop, with proper attention to the pulling and steeping. From a great number of experiments, for the last ten years, both in cisterns within doors and in the field, I find the best temperature for watering the flax to be 70 degrees, which is seldom obtained out of doors in this country. Hence, Schenck's system is the best, provided more time is given, and the heat kept under 80 degrees. I have heard they use the heat above 90; but, in that case, the flax will not be so soft and silky as if done at or under 70 degrees, giving it time. I have steeped it in three days, in a shallow pit, only two and a-half feet deep, during very hot weather. I have likewise done it in a stove, where the temperature of the water was raised to that of the pit.—A great heat, in my opinion, coagulates the albuminous matter contained in the straw, and, although freed from the wood, it is retained in the fine fibre, which makes it hard and "husky" to the feel. I have offered these latter observations, as there is an old plan, lately revived, which would make a serious change on the nature of the fibre. It is proposed to take the flax from the field, after being pulled and dried, and to prepare it for the spinner immediately, leaving all the oil, gluten, albumen, and colouring matter in the fibre. This would render it hard, the fine fibres adhering together, so that the spinner would not be able to spin fine numbers of yarn. It would be strong and give a greater weight. Of this, at least ten per cent. would be lost when the yarn is boiled for the manufacturer's use. I have bleached a small portion of coarse fabric made of the prepared flax. It lost, in steeping in warm water for a night, 11 per cent.; in the first bleaching operation, 15½ per cent. more; and, in the last, 9 per cent. more. The original weight of the piece was 338 grains, and, when finished, being not even full bleached, the weight was reduced to 231 grains. I would, as a member of this Society, advise it to be cautious, and to judge only from the results of experiments made by the Committee, and that none of its members would take for granted all that is advanced by newspapers. At the same time, it will, no doubt, encourage all new inventions, when proved to be of use and benefit to the country. Mr. Niven further stated, that he had been trying an experiment that morning. He had taken a handful of flax, on Monday last—the very handful, by the way, which he had had the honour of rippling before her Majesty—and placed the half of it in steep, at a heat of 70 degrees. He had it taken out that morning, and had it scutched. On looking at the two portions of the same stalk, so treated, on being taken out of the steep, there could be but little difference observed, one being but a little more hard and black-looking than the other. It looked very well, being, perhaps, loyal flax—(laughter)—but, upon the application of the microscope, he could discover such differences as led him to conclude that the plant would never do, without steeping, as a preparation for manufacture.

Mr. W. G. Andrews said he had undertaken a number of experiments, as a person who had taken an interest in everything connected with flax, and in its manufacture and improvement. He had now come forward as a member of the Committee of the Flax Society to lay before the meeting the result of these experiments. As he had attended every annual meeting of the Society which had as yet been held, he could not help following Mr. Crawford in what that gentleman had said as to the increased support which this Society was receiving from the landed proprietors, and from other persons of such influence as those whom he now saw assembled before him. He trusted that the interest exhibited in that room would be carried forth from it; and that the occupying tenants would see the advantages of the situation in which they were placed, and that they would grow a greater quantity of flax than hey had hitherto done. He thought he might fairly say, from anything he had seen and heard, and from conversations which he had with occupying tenants, that the time was come in which they perceived it to be their interest, and when they would grow a greater quantity of flax than they had done at any former period. (Hear, hear.) He regretted that he had not a written report to hand in, formally, to the table, in reference to the experiments which he had carried out; but he would submit a few facts in relation to them, with the notes which he had margined them with; not venturing to detain the meeting with any observation which was not quite pertinent to the experiments themselves. [Mr. Andrews then read a tabular statement of the results of his experiments in steeping, at different temperatures, and it was agreed, on the suggestion of the Chairman, that the table should be printed in the appendix of the Society's annual report.]

Sir J. M. Stronge, Bart., of Tynan-Abbey, in moving the next resolution, confessed that, until this day, he was sceptical as to the great advantages of Schenck's process; but, after the admirable report of the Committee, and the luminous statements of the gentlemen who had delivered addresses that day, there could be no doubt of the great advantages of that system. If any gentleman had any doubt on the subject, he had only to look at the yarns prepared by Schenck's process, and the fabrics prepared by the other process. For his part, all his doubts were removed, and he would not take up more of their time, but content himself with moving the resolution.

Mr. S. K. Mulholland, in seconding the resolution, observed, that the nature of it appeared to him to form one of the most important features in the history of the Society's proceedings. It was very clearly evident that nature had most liberally acceded to them all that was necessary for the successful growth of flax, but it was also evident that art and science would have to be called in to enable them to follow up the process, or, at least, to improve and expedite it. Instead of the old mode of steeping, to enable the material to be useful, it was desirable that they should be enabled to carry on that stage of the process of dressing the flax on a larger scale than could be effected by the antiquated and primitive way he had mentioned. At the juncture of their proceedings when this desideratum was felt most, Schenck's patent appeared, upon which they at first looked rather suspiciously. The theory of it appeared good, but they doubted the practicability of carrying it into practice. They were doubtful in identifying their name or character with it, till, at least, by repeated observation and the frequent appointment of Sub-Committees, who took great pains to make themselves acquainted with it, they satisfied themselves on the matter, and the report of the Sub-Committee would fully explain the views of the Society with regard to it. He trusted that what had occurred would lead to greater extension of the system. He wished to make an observation on a point which was fully alluded to in the report; but the matter had been so much taken up by *The Morning Chronicle*, he thought it right to say, that they looked with very great doubt, indeed, upon the new system spoken of by that paper. (Hear, hear.) It was natural that from their Society, patronised as it was by the Government, should emanate any improvement that might take place in the cultivation of flax. They looked suspiciously on these joint-stock Companies, and he would suggest to any gentleman that he should consult the Society before adopting this new process, if it so far came to maturity as to command any amount of support, and he would get their best advice.

Mr. E. M'Donnell, of Glenarm-Castle, proposed the next resolution. He said, it seemed to him to be one of a practical nature, and having reference to the able report which had been read by the talented Secretary of the Society. (Hear, hear.) While they regarded the prosperity which had attended the Society, they could not help acknowledging the means by which it had been brought about; and he thought that, looking at the degree of perfection to which the Society had now been brought, they could not fail to record their confidence in the exertions of the Secretary. [Mr. M'D. then read the resolution.] With respect to the advantages of the Society, it was impossible to meet so many gentlemen as were assembled that day, without knowing that it was necessary to use every exertion within their power to promote the objects the Society had in view. (Hear.)

Mr. Jonathan Richardson seconded the resolution. He said, when he came into that room he had no expectation that he would have the honour of addressing the meeting. He could, however, assure them, after a great many years' experience, it required greater and greater care to be exercised in every new successive experiment, in the matter of improvement. At least, it was necessary to know that the plans submitted to the trade and to the public had been thoroughly tested and tried; and hence it was that he thought that the resolution was one which should meet with their acceptance. There might be cases in which the flax would bear a good appearance; there would be other cases in which, whilst it was sought to employ it on a large scale, it would not be found to be of any service whatever. There were cases in which there was yarn or flax suited for the medium or the light trades which would not be suited to the heavy, and so on with the others; and hence it was absolutely necessary to use great precaution in the adoption of improvements. These improvements required not only the flax, but the linen and yarn, to be tested—because it required the whole of the different stages of the article to be equally benefited to constitute the improvement. There was a great deal of ignorance afloat in regard to the flax plant; and it was from that ignorance resulted, most probably, the differences with regard to the value of improvements. Mr. Richardson then alluded to the matter of Schenck's process, which, while he approved of as a whole, he could not approve of as applied to certain fabrics. He concluded by seconding the resolution.

It was put and carried.

Mr. M'Neile said, he had a very long resolution, but he was not going to make a long speech. He could not say a word about flax, but he would like to say something about hemp. He was glad that the Limerick people were so well supplied with hemp that they did not want it all for their own customers. (Laughter.) They were indebted to Mr. Dargan for this hemp, and it was not the only instance in which he had benefited the country. He was glad that Mr. Dargan had not confined himself to the North, and he hoped that he would be of use to their friends in Limerick in other ways than providing hemp for them. (Laughter.) Mr. M'Neile then moved the appointment of the members of Committee.

Mr. Bell, of Abbeyleix, in seconding the resolution, mentioned that Lord de Vesci had commenced the culture of flax on his estates in the Queen's County, and that his experiment was going on remarkably well. He was certain that this crop would enable the tenants to pay their rents with more ease than any other crop, and his own experience during the last year had proved it.

Dr. M'Kibbin said that the Society had been complimented for the great deal of good it had done, and he was satisfied that those compliments were deserved; but he was equally satisfied that a vast amount of that good had been owing to the zealous and indefatigable labours of their worthy Secretary. He felt convinced that the vote of thanks to him would be seconded by every person in the room.

Mr. W. G. Andrews seconded the vote of thanks to Mr. MacAdam, which was carried amid loud applause.

Mr. F. Filgate, in moving that the Earl of Erne do leave the Chair, and that the Earl of Roden be called thereto, took occasion to allude to the deep interest that Lord Downshire took in the Society, and stated that his Lordship felt regret in not being able to attend—a feeling that would be diminished when he heard how ably his place had been filled by the Noble Earl who had presided that day, and when he learned the large attendance at the meeting of gentlemen connected with agriculture and commerce.

The motion was seconded and passed. Lord Roden took the Chair; a vote of thanks was moved and seconded to the former Chairman, whereupon

The Chairman said—I think it right, before putting the resolution, to state that there can be no second opinion as to the proposition which has now been submitted before me. I am also anxious to state the cause which brought us here this day, and which has afforded me the pleasure of attending this meeting. I live, at the present time, in a part of the country where I cultivate a large farm—upwards of 800 acres—all which is in my own hands, in the neighbourhood of Dundalk, and the soil of which I believe to be peculiarly favourable for the cultivation of flax. It was upon that account that I was anxious to come here, on the present occasion, in order that I might learn lessons at the hands of practical men—(hear, hear)—and I can bear testimony to the pleasure with which I have heard the observations made at this meeting. I have come here with the hope of hearing some remarks of practical utility, and I must confess that I have not been disappointed. I trust that I will carry home with me some of the lessons which I have heard here to-day to my own farm, where I may have an opportunity of carrying them into effect. I could only wish to have heard, even at greater length, those gentlemen who favoured us with practical observations. (Hear.) I only say, in addition, that no one, as an individual, here feels more than I do the obligation which is due to the merchants of Belfast for their exertions in support of this institution; and, as to his Excellency the Lord Lieutenant, the Earl of Clarendon, I tender him—as a member of the Society and anxious for the promotion of the objects of the Society, for his having procured the grant of 3,000*l*.—my sincere thanks; and I also feel thankful to the merchants and gentlemen of Belfast, as the promoters and originators of this most important movement. (Cheers.) I can only say that, so far as I am concerned, whatever assistance I am able to give, as an humble individual, shall be ever most cheerfully rendered. (Cheers.)

The Noble Earl then put the resolution, which was carried unanimously.

The meeting then separated.

RESOLUTIONS.

AT the Tenth Annual General Meeting, held in the Society's Rooms, Commercial Buildings, Belfast, on Friday, 29th November, 1850,—the Right Honourable the EARL OF ERNE in the Chair,—the Annual Report of the Committee, and the Annual Statement of Accounts having been read by the Secretary, the following resolutions were unanimously agreed to:—

Moved by A. SHAFTO ADAIR, Esq., M.P.; seconded by R. J. TENNENT, Esq., M.P., and resolved,

I.—"That the annual report now read be received and adopted, and that it be printed for circulation, with such other information as may appear advisable to the Committee."

Moved by the Lord Bishop of DOWN; seconded by W. S. CRAWFORD, Esq., M.P., and resolved,

II.—"That the best thanks of the Society be presented to the Lord Lieutenant for the warm interest which his Excellency has always manifested in the progress of the Society."

Moved by Lord DUFFERIN; seconded by JOHN BIRNEY, Esq., and resolved,

III.—"That the thanks of the Society be given to the Committee, for their unremitting and successful exertions in carrying out the Society's objects."

Moved by Sir R. BATESON, Bart.; seconded by the HIGH-SHERIFF of Longford, and resolved,

IV.—"That the Society regards with peculiar satisfaction the present position which the subject of flax culture has assumed, and request the Committee will give their best aid to the movement so favourably begun.

Moved by Sir J. M. STRONGE, Bart., M.P.; seconded by S. K. MULHOLLAND, Esq., and resolved,

V.—"That, in consequence of the highly-favourable report on the patent steeping process, presented by the Committee, the Society recommends the general adoption of that system, as the best hitherto brought forward, affording, as it does, great inducements, both to gentlemen and tenant farmers, to cultivate flax extensively, since it avoids the trouble and risk hitherto attending the preparation of the fibre, and affords an immediate market for the crop when grown."

Moved by EDMUND M'DONNELL, Esq., D.L.; seconded by JONATHAN RICHARDSON, Esq., and resolved,

VI.—"That the Society highly approves of the caution which the Committee have hitherto used in delaying their sanction of new plans of treating flax, until their real merits have been ascertained by a rigorous examination; and that, in future, while courting suggestions, and impartially considering them, they shall be equally careful in subjecting them to test."

Moved by JOHN M'NEILE, Esq., D.L.; seconded by WILLIAM BELL, Esq., J.P., and resolved,

VII.—"That the following be the list of office-bearers of the Society for the ensuing year:—*Patrons*—Her Most Gracious Majesty the Queen, and H.R.H. Prince Albert. *Vice-Patron*—His Excellency the Earl of Clarendon, Lord Lieutenant of Ireland. *President*—The Marquis of Downshire. *Vice-Presidents*—The Marquis of Hertford, the Marquis of Waterford, the Earl of Courtown, the Earl of Roden, the Earl of Erne, the Earl of Caledon, the Earl of Ranfurley, Viscount Newry and Morne, M.P.; Lord Rossmore, Lord Monteagle, the Lord Bishop of Down, Sir R. A. O'Donnell, Bart.; Sir J. M. Stronge, Bart.; Sir R. Bateson, Bart.; Sir W. Verner, Bart., M.P.; Colonel A. Knox Gore, Lieutenant of County Sligo; Sir Robert Kane, W. S. Crawford, M.P.; A. Shafto Adair, M.P.; R. J. Tennent, M.P.; the Very Rev. the Dean of Ross; Edmund M'Donnell, D.L., J.P. *Committee*—W. G. Andrews, J. B. Bankhead, R. H. H. Becher, the Rev. F. Blakely, John Borthwick, James Campbell, John Charters, John Sharman Crawford, Wm. Dargan, George Greer, Edmund Grimshaw, S. G. Fenton, John Hancock, John Herdman, Richd. Hull, Andrew Mulholland; S. K. Mulholland, John M'Master, Robert M'Kibbin, M.D.; Richard Niven, John Preston, J. Temple Reilly, George Robinson, Jonathan J. Richardson, C. G. M. Skinner, Wm. Valentine, and Richard Walker. *Auditors*—John Charters, James Campbell. *Secretary*—James MacAdam, jun."

Moved by ROBERT M'KIBBIN, Esq., M.D.; seconded by W. G. ANDREWS, Esq., and resolved,

VIII.—"That the thanks of this meeting be given to the Secretary, for the very efficient and satisfactory manner in which he has conducted the business of the Society for the past year."

(Signed) ERNE, *Chairman.*
JAMES MACADAM, JUN., *Secretary.*

On the motion of F. FILGATE, Esq., J.P.; seconded by J. S. CRAWFORD, Esq., J.P., the Earl of Erne having left the Chair, and the Earl of Roden being called thereto, the thanks of the meeting were given to the Earl of Erne, for his dignified and proper conduct in the Chair.

(Signed) RODEN, *Chairman.*
JAMES MACADAM, JUN., *Secretary.*

APPENDIX.

DIRECTIONS

FOR THE

PROPER MANAGEMENT OF THE FLAX CROP,

COMPILED BY THE COMMITTEE

OF THE

ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

THE following directions have been carefully arranged from the mass of information obtained by the Society and their agriculturists, during their ten years' experience in the improved system of management:—

SOIL AND ROTATION.

By attention and careful cultivation, good flax may be grown on various soils; but some are much better adapted for it than others. The best is a sound, dry, deep loam, with a clay subsoil. It is very desirable that the land should be properly drained and subsoiled; as, when it is saturated with either underground or surface water, good flax cannot be expected.

Without method, there cannot be success—different soils require a difference of rotation. In the best soils of Flanders, flax is grown in the third year of a seven-course rotation, or the fifth year of a ten-course rotation.

It is not considered generally advisable to grow flax more frequently than once in ten years: not because it exhausts the land more than any other crops, but because good *flax* cannot be had, at short intervals, on the same soil.* In Belgium, it invariably follows a corn crop—generally oats; and in this country, where oats is such a usual crop, the same system might be profitably pursued; but it must be understood, that it is only after oats following a green crop or old lea, and never after two or three succeeding crops of oats, which bad practice still prevails in some districts. It is a very general error among farmers, to consider it necessary that flax should follow a potato crop. Except on very poor soils, a better crop will be produced after grain, and the double benefit of the grain and flax secured. If old lea be broken up, and potatoes planted, followed by a grain crop, a very fine crop of flax may be obtained in the ensuing year.

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* The following rotation, which would bring flax once in ten years, has been proposed:—First year, potatoes; second, barley, laid down with grasses; third year, cut for soiling; fourth year, pasture; fifth year, flax; or the one-half might be better in flax, the other in oats, so that, with the return of the rotation, which would be in five years, the flax could be put on the ground which, in the last rotatory course, was under corn, throwing a range of ten years between the flax crops coming into the same ground.

A gentleman of much practical knowledge recommends the following as being the most profitable:—1. Oats after the grass and clover. 2. Flax pulled in August; then ploughed and harrowed in with two cwt. guano and two cwt. gypsum; then sown with rape. 3. Potatoes or turnips, well manured. 4. Wheat, sown in Spring, with clover and ryegrass. 5. Hay and clover. 6. Grazing. 7. Oats. 8. Flax and Winter vetches; guano, as before mentioned. 9. Turnips, well manured. 10. Barley, sown with ryegrass and clover. 11. Clover and hay. 12. Grazing. 13. Oats.

PREPARATION OF THE SOIL.

One of the points of the greatest importance, in the culture of flax, is by thorough-draining, and by careful and repeated cleansing of the land from weeds, to place it in the finest, deepest, and cleanest state. This will make room for the roots to penetrate, which they will often do to a depth equal to one-half the length of the stem above ground.

After wheat, one ploughing may be sufficient, on light, friable loam, but two are better; and, on stiff soils, three are advisable—one immediately after harvest, across the ridges, and two in Spring, so as to be ready for sowing in the first or second week of April. Much will, of course, depend on the nature of the soil, and the knowledge and experience of the farmer. The land should be so drained and subsoiled, that it can be sown in flats, which will give more evenly and much better crops. Subsoiling should not be done at a less interval than two years prior to the flax crop. This gives the land time to consolidate. But, until the system of thorough-draining be general, it will be necessary, after oats, to plough early in Autumn, to the depth of six or eight inches. Throw the land into ridges, that it may receive the frost and air; and make surface drains to carry off the rains of Winter. Plough again in Spring, three or four inches deep, so as to preserve the Winter surface for the roots of the flax. The Spring ploughing should be given some time before sowing, to allow any seeds of weeds in the land to vegetate, and the harrowing in of the flaxseed will kill them, and save a great deal of after weeding. Following the last harrowing, it is necessary to roll, to give an even surface and consolidate the land, breaking this up again with a short-toothed or seed harrow, before sowing, which should be up and down, not across the ridges or anglewise.

SOWING.

The seed best adapted for the generality of soils is Riga, although Dutch has been used in many districts of country, for a series of years, with perfect success. American seed does not generally suit well, as it is apt to produce a coarse, branchy stem. If used, it should be on deep, loamy soils. In buying seed, select it plump, shining, and heavy, and of the best brands, from a respectable merchant. Sift it clear of all the seeds of weeds, which will save a great deal of after trouble, when the crop is growing. This may be done by fanners, and through a wire sieve, twelve bars to the inch. Home-saved seed has produced such excellent crops, of late, that it is strongly recommended that every farmer should only sow, each year, as much foreign seed as would produce a sufficient quantity for his flax crop of the following season.* The thinner portion of the crop would be the best for this purpose, as, when flax grows thin, it produces much seed. This plan, besides the saving effected in the price of foreign sowing seed, would effectually secure the farmer from any danger of loss from fraudulently-made-up seed. It will be best, in most cases, to use the seed which is saved from this, in the following year, for feeding, or to sell it for the oil mills, although it often produces good crops. The proportion of seed may be stated at three and a-half imperial bushels to the Irish or Plantation acre; and so on, in proportion to the Scotch or Cunningham, and the English or Statute acre. It is better to sow too thick than too thin; as, with thick sowing, the stem grows tall and straight, with only one or two seed capsules at the top; and the fibre is found greatly superior, in fineness and length, to that produced from thin-sown flax, which grows coarse, and branches out, producing much seed, but a very inferior quality of fibre. The ground being pulverized and well cleaned, roll and sow. If it has been laid off without ridges, it should be marked off in divisions, eight to ten feet broad, in order to give an equable supply of seed. After sowing, cover it with a seed harrow, going twice over it—once up and down, and once across or anglewise; as this makes it more equally spread, and avoids the small drills made by the teeth of the harrow. Finish with the roller, which will leave the seed covered about an inch—the proper depth. The ridges should be very little raised in the centre, when the ground is ready for the seed, otherwise, the crop will not ripen evenly; and, when land is properly drained, there should be no ridges. The sowing of clover and grass seeds along with the flax is not advised, when it can be conveniently avoided, as these plants always injure the root ends of the flax. But carrots may be sown, in suitable soils, in drills, so that the person pulling the flax may step over the rows, which may be afterwards hoed and cleaned, and should have some liquid manure. A stolen crop of rape or Winter vetches, or of turnips of the stone or Norfolk globe varieties, may be taken, after the flax is pulled. Rolling the ground after sowing is very advisable, care being taken not to roll when the ground is so wet that the earth adheres to the roller.

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* The produce of seed averages about 12 bushels the Statute acre, so that the seed saved off one Statute acre would sow about five.

MANURE FOR THE FLAX CROP.

Recent chemical investigations have shewn that the fibre of flax does abstract from the soil certain matters, although not in so large a proportion as several other commonly cultivated crops. To supply to the soil all the matters which the entire plant requires, so as to leave the land in the same state of fertility as before, the following compound has been proposed as a manure, which may be sown broadcast on the land, prior to the last harrowing before sowing the flaxseed :—

FOR A STATUTE ACRE OF LAND.

		s.	d.
Muriate of Potash, 30lbs., ...	cost about	2	6
Chloride of Sodium (common salt), 28lbs., ...	"	0	3
Burned Gypsum, powdered, 34lbs., ...	"	0	6
Bone dust, 54lbs., ...	"	3	3
Sulphate of Magnesia (Epsom salts), 56lbs.	"	4	0
		10	6

WEEDING.

If care has been paid to cleaning the seed and the soil, few weeds will appear; but if there be any, they must be carefully pulled. It is done in Belgium by women and children, who, with coarse cloths round their knees, creep along on all-fours. This injures the young plant less than walking over it (which, if done, should be by persons whose shoes are not filled with nails.) They should work, also, facing the wind, so that the plants laid flat by the pressure may be blown up again, or thus be assisted to regain their upright position. The tender plant, pressed one way, soon recovers; but, if twisted or flattened by careless weeders, it seldom rises again.

PULLING.

The time when flax should be pulled is a point of much nicety to determine. The fibre is in the best state before the seed is quite ripe. If pulled too soon, although the fibre is fine, the great waste in scutching and hackling renders it unprofitable; and, if pulled too late, the additional weight does not compensate for the coarseness of the fibre. It may be stated, that the best time for pulling is, when the seeds are beginning to change from a green to a pale brown colour, and the stalk to become yellow, for about two-thirds of its height from the ground. When any of the crop is lying, and suffering from wet, it should be pulled as soon as possible, and kept by itself. So long as the ground is undrained, and imperfectly levelled before sowing, the flax will be found of different lengths. In such cases, pull each length separately, and steep in separate pools, or keep it separate in the same pool. Where there is much second growth, the flax should be caught by the puller just underneath the bolls, which will leave the short stalks behind. If the latter be few, it is best not to pull them at all, as the loss from mixture, and discoloration by weeds, would counterbalance the profit. If the ground has been thorough-drained, and laid out evenly, the flax will be all of the same length. It is most essential to take time and care to keep the flax even, like a brush, at the root ends. This increases the value to the spinner, and, of course, to the grower, who will be amply repaid, by an additional price, for his extra trouble. Let the handfuls of pulled flax be laid across each other diagonally, to be ready for the

RIPPLING,

Which should be carried on at the same time, and in the same field, with the pulling. If the only advantage to be derived from rippling was the comparative ease with which rippled flax is handled, the practice ought always to be adopted; but, besides this, the seed is a most valuable part of the crop, being worth, if sold for the oil mill, £3 per acre, and if used for feeding stock of all kinds, at least £4 per acre. The apparatus is very simple. The ripple consists of a row of iron teeth screwed into a block of wood. This can be procured in Belfast, or may be made by any handy blacksmith.* It is to be taken to the field, where the flax is being pulled, and screwed down to the centre of a nine-feet plank, resting on two stools. The ripplers may either stand or sit astride at opposite ends. They should be at such a distance from the comb, as to permit of their striking it properly and alternately. A winnowing-sheet must be placed under them, to receive the bolls as they are rippled off; and then they are ready to receive the flax just pulled, the handfuls being placed diagonally, and bound up in a sheaf. The sheaf is laid down at the right hand of the rippler, and untied. He takes a handful with one hand, about six inches from the root, and a little nearer the top, with the other. He spreads the top of the handful like a fan, draws the one-half of it through the comb, and the other half past the side; and, by a half-turn of the wrist, the same operation is repeated with the rest of the bunch. Some, however, prefer rippling without turning the hand, giving the flax one or two pulls through, according to the quantity of bolls. The flax can often be rippled, without being passed more than once through the comb. He then lays the handfuls down at his left side, *each handful* crossing the other, when the sheaf shall be carefully tied up and removed. The object of crossing the handfuls so carefully, after rippling, when tying up the beets for the steep, is, that they will part freely from each other, when they are taken to spread out on the grass, and not interlock, and be put out of their even order, as would otherwise be the case. If the weather be dry, the bolls should be kept in the field, spread on winnow-cloths, or other contrivance for drying; and, if turned from time to time, they will win. Passing the bolls first through a coarse riddle, and afterwards through fanners, to remove straws and leaves, will facilitate the drying. If the weather be moist, they should be taken indoors, and spread out thinly and evenly on a barn floor or on a loft, leaving windows and doors open, to allow a thorough current of air, and turned twice a-day. When nearly dry, they may be taken to a corn kiln (taking care not to raise it above Summer heat), and carefully turned, until no moisture remains. By the above plan of *slow* drying, the seed has time to imbibe all the juices that remain in the husk, and to become perfectly ripe. If it be taken at once from the field, and dried *hurriedly* on the kiln, these juices will be burned up, and the seed will become shrivelled and parched, little nutritious matter remaining. In fine seasons, the bolls should always be dried in the open air, the seed thrashed out, and the heaviest and plumpest used for sowing or crushing. The light seeds and chaff form most wholesome and nutritious feeding for cattle. Flax ought not to be allowed to stand in the field, if possible, even the second day; it should be rippled as soon as pulled, and carried to the water as soon as possible, that it may not harden.

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* The best ripples are made of half-inch square rods of iron, placed with the angles of iron next the ripplers, 3-16ths of an inch asunder at the bottom, half-an-inch at the top, and 18 inches long, to allow a sufficient spring, and save much breaking of flax. The points should begin to taper 3 inches from the top.

WATERING.

This process requires the greatest care and attention. River water is the best. If spring water has to be used, let the pond be filled some weeks, or months, if possible, before the flax is put in, that the sun and air may soften the water. That containing iron or other mineral substances should never be used. If river water can be had, it need not be let into the pond sooner than the day before the flax is to be steeped. The best size of a steep-pool is 12 to 18 feet broad, and 3½ to 4 feet deep. Place the flax loosely in the pool in one layer, somewhat sloped, and in regular rows, with the root end underneath; the tie of each row of sheaves to reach the roots of the previous one; cover with moss sods, or tough old lea sods, cut thin, laid perfectly close, the sheer of each fitted to the other. Before putting on the sods, a layer of rushes or ragweeds is recommended to be placed on the flax, especially in new ponds. As sods are not always at hand, a light covering of straw may do, with stones laid on it, so as to keep the flax just under the water; and as the fermentation proceeds, additional weights should be laid on,—to be removed as soon as the fermentation ceases, so as not to sink the flax too much in the pool. Thus covered, it never sinks to the bottom, nor is affected by air or light. A small stream of water, allowed to run through a pool, has been found to improve its colour. In this case, if the pools are in a line, the stream should be conducted along the one side, and run into each pool separately, and the water of each pool run off, along the opposite side, in a similar manner. It will be sufficiently steeped, in an average time, from eight to fourteen days, according to the heat of the weather and the nature of the water. Every grower should learn to know when the flax has had enough of the water, as a few hours too much may injure it. It is, however, much more frequently *under*-watered than *over*-watered. The best test is the following:—Try some stalks of average thickness, by breaking the *shove*, or woody part, in two places, about six or eight inches apart, at the middle of the stalk; catch the broken bit of wood, and if it *will pull freely out, downwards, for that length, without breaking or tearing the fibre, and with none of the fibre adhering to it*, it is ready to take out. Make this trial every six hours, after fermentation subsides, for sometimes the change is rapid. Never lift the flax roughly from the pool, with forks or grapes, but have it carefully handed out on the bank, by men standing in the water. It is advantageous to let the flax drain twelve to twenty-four hours, after being taken from the pool, by placing the bundles on their root ends, close together, or on the flat, with the slope; but the heaps should not be too large, otherwise the flax will be injured by heating.

Within the last two years, a system of steeping has been introduced in Ireland, which is calculated ultimately to supersede the usual mode. It is effected by placing the flax, after pulling, drying, and beating off the seed (as in the Courtrai system) in vats filled with water, and heated by steam to an average temperature of 90 degrees. By this system the fibre is more uniformly watered, and not at all impaired in strength. The quality, where comparative trials have been made, has always turned out superior to what is steeped in the ordinary way. This system is protected by patent, and authorization to adopt it must be had from the patentee.*

SPREADING.

Select, when possible, clean, short, thick pasture ground for this operation; and mow down and remove any weeds that rise above the surface of the sward. Lay the flax evenly on the grass, and spread thin and very equally.

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* By addressing a communication to Messrs. Bernard & Koch, Newport-Mayo, or Belfast, the terms may be ascertained, with full particulars of the apparatus required.

If the directions under the head of rippling have been attended to, the handfuls will come readily asunder, without entangling. Turn it two or three times while on the grass (with a rod about eight feet in length, and an inch and a-half in diameter), that it may not become of different shades, by the unequal action of the sun, which is often the case, through inattention to this point. Turn it when there is a prospect of rain, that the flax may be beaten down a little, and thus prevented from being blown away.

LIFTING.

Six to eight days if the weather be showery, or ten to twelve if it be dry, should be sufficient on the grass. A good test of its being ready to lift is, to rub a few stalks from the top to the bottom; and, when the wood breaks easily, and separates from the fibre, leaving it sound, it has had enough of the grass. Also, when a large proportion of the stalks are perceived to form *a bow and string*, from the fibre contracting and separating from the woody stalk. But, the most certain way is, to prove a small quantity with the handbreak or in a flax mill. In lifting, keep the lengths straight, and the ends even, otherwise great loss will occur in the rolling and scutching. Tie it up in small bundles; and, if not taken soon to be scutched, it will be much improved by being put up in small stacks, loosely built, with stones or brambles in the bottom, to keep it dry, and allow a free circulation of air. Stacks built on pillars would be the best.

DRYING,

By fire, is *always most pernicious*. If properly steeped and grassed, no such drying is necessary; but, to make it ready for breaking and scutching, exposure to the sun is sufficient. In some districts, it is put to dry *on kilns*, in a damp state, and is absolutely burned before it is dry, and the rich oily property of the flax is always greatly impaired. On this point, the Society can scarcely speak too strongly, as the flax is either destroyed, or rendered not worth one-half of what it would be, if properly dried.

BREAKING AND SCUTCHING,

If done by hand, should be on the Belgian system, which is less wasteful than that practised in Ireland. If by milling, the farmer will do well to select those mills in which the improved machinery has been introduced. The Society would also recommend, that the farmer should endeavour to have his flax scutched by a mill-owner who pays his men by the day, and not by the stone, even if it should cost him higher in proportion; the system of paying the scutchers by the stone rendering them more anxious to do a large quantity in the day than to produce a good yield from the straw.

THE COURTRAI SYSTEM.

This is the mode in which flax should be saved for steeping on Schenck's hot-water system. It requires to be very carefully done, as inattention will reduce the value of the straw, and yield inferior fibre. The flax stems should be put together in bunches, about one-half larger than a man can grasp in one hand, spread a little, and laid on the ground in rows after each puller; the bunches laid with tops and roots alternately, which prevents the seed-bolls from sticking to each other in lifting. It should be stooked as soon after pulling as possible, and never allowed to remain over night unstooked, except in settled weather. The stooking should go on at the same time as the pulling, as, if flax is allowed to get rain, while on the ground, its colour is injured. A well-trained stooker will put up the produce of a Statute acre, or more, in good order, in a day, with two boys or girls to hand him the bunches. The flax should be handed with the tops to the stooker. The handfuls, as pulled, are set up, resting against each other—the root ends spread well out, and the tops joining like the letter A. The stooks are made eight to ten feet long, and a short strap keeps the ends firm. The stooks should be very narrow on the top, and thinly put up, so that they may get the full benefit of the weather. In six or eight days, at most, after being pulled, the flax should be ready for tying up in sheaves of the size of corn-sheaves. It is then ricked, and allowed to stand in the field until the seed is dry enough for stacking. To build the rick, lay two poles parallel on the ground, about a foot asunder, with a strong upright pole at each end. The flax is then built, the length of a sheaf in thickness or breadth. The bottom poles should be laid North and South, so that the sun shall get at both sides of the rick during the day. In building, the sheaves should be laid tops and roots alternately, built seven to eight feet high, and finished on the top by laying a single row of sheaves lengthwise, or across the others, and then another row as before, but with the tops all the same way, which gives a slope to throw off rain, and finished by putting on the top a little straw, tied with a rope. In this way, if properly built, it will stand secure for months. It can be stacked at leisure, or put in a barn, the seed taken off during the Winter, and the flax steeped in the following May; or it may be kept stacked, without receiving any injury, for two or three years, or even lon er.

MR. WARNES'S (OF TRIMINGHAM) SYSTEM OF BOX-FEEDING.

SUMMER.—Ryegrass and clover, or any other green crop, cut into chaff of about an inch long, with the addition of ground linseed made into compound. WINTER.—Seven-eighths straw—one-eighth hay, with turnip tops or wurzel leaves cut into chaff, with the addition of linseed as above. *To make the compound*, fill the furnace with water to within six inches, and, when boiling, strew by hand one-fifth of linseed meal to four-fifths of water, a boy stirring the meal in, till it is well mixed—(damp the fire); let the mucilage simmer about five or six minutes, when it will become a strong jelly. Into a large tub put about three bushels of the chaff, adding enough of the mucilage to wet it; mix and ram well down, then add more chaff, &c., mixing and ramming down every three baskets. The compound is then covered over, and, in about two hours, the mucilage being absorbed by the chaff, may be given to the cattle. If it is wished to *push the cattle on*, sprinkle a small proportion of the meal of barley, or other corn, upon each layer of the chaff and mucilage, also Swedish turnips, carrots, or wurzel, cut small, may be added, to give the compound a flavour. Altogether, the above compound will be found, at the present juncture, extremely economical for *fattening*, rearing, or maintaining store stock. DIRECTIONS FOR FEEDING. SUMMER.—(*At five in the*

Morning and Three in the Afternoon.)—Give each beast about half-a-bushel of the compound, feeding the remainder of the day with chaff. Water once a-day. WINTER.—(*Morning, Five o'clock.*)—Begin with half-a-peck of the compound to each beast; continue this food till the beasts are nearly satisfied. (*At Seven and Nine.*)—Feed with half-a-bushel of cut Swedish turnips to each, at twice. (*Eleven.*)—A feed of the compound. (*Afternoon, at One and Three.*)—As many Swedes as the beasts will eat, *a little at a time.* (*Six.*)—A good feed of compound, leaving for the night. The boxes or sheds in which the cattle are kept, must be sparingly littered twice a-day, and cleaned out when full. Food to be given a *little* at a time. UTENSILS.—An iron furnace, to hold about forty gallons; an iron stirrer (like a small mashing stick); an iron bowl, with a handle; a linseed crusher—tub or stone cistern of about 100 gallons—wooden rammer; a bushel basket—chaff cutter—turnip cutter; a fork, with four flat prongs; a common bucket, with iron handle; a skip or box to hold about a peck; a bin, with partitions for linseed before and after crushing. In fixing the boiler, it should have a curb of wood, six inches deep, sloping back; this will prevent the mucilage boiling over. [For directions to make compound of grain, and other particulars, see Mr. Warnes's book, to be had of all booksellers.]

VISIT
OF
HIS EXCELLENCY THE EARL OF CLARENDON,
LORD LIEUTENANT OF IRELAND, TO BELFAST.

On 14th September, 1850, the Lord Lieutenant arrived in Belfast, for the purpose of inspecting the various departments of flax preparation, and the linen manufacture.

VISIT TO THE LINEN-HALL.

His Excellency having intimated his intention to visit the Linen-hall, and there receive the address of the Flax Society, a large party of ladies and gentlemen were assembled in it to receive him. Among those present were the following Vice-Presidents of the Society:—The Bishop of Down, the Earl of Erne, Sir James M. Stronge, Bart., Mr. W. S. Crawford, M.P., and the Dean of Ross. There were also the following members of Committee, who wore a blue ribbon at the button-hole of their coats, with medal attached, commemorative of her Majesty's visit to the Hall:—Messrs. J. S. Crawford, A. Mulholland, John Herdman, S. K. Mulholland, Dr. M'Kibbin, Rev. F. Blakely, John Charters, Jonathan J. Richardson, John Borthwick, James Campbell, Richard Hull, C. G. M'G. Skinner, John Preston, John Hancock, J. Temple Reilly, and the Secretary. Many other members of the Society were in the library, where the address was presented.

His Excellency, who arrived about half-past one o'clock, and was hailed with loud cheers, as well by the people outside as by the gentlemen in the Hall, the ladies also exhibiting their respect after the usual manner, was received at the entrance by Mr. J. F. Ferguson and other members of the Hall Committee, by whom he was conducted to the library. There Mr. Crawford, M.P., introduced to him the Vice-presidents and Committee of the Flax Society. When Mr. S. K. Mulholland was presented, his Excellency said he was happy to meet, in this place, a gentleman to whose exertions he believed was chiefly owing the foundation of a Society which had been of such value to the country. Mr. Mulholland thanked his Excellency for the handsome compliment he had paid him, in alluding to the part he had taken in the management of the Society, and said that although he and others had had something to do with the nursing of the bantling, it was through his Excellency's fostering care that it had now assumed so vigorous a growth.

Mr. Crawford, M.P., as the Vice-President who had been deputed to read the address, proceeded to do so, as follows:—

"*To his Excellency George William Frederick Earl of Clarendon, K.G., G.C.B., Lord Lieutenant General and General Governor of Ireland.*

"May it Please your Excellency,—We, the members of the Royal Society for the Promotion and Improvement of the Growth of Flax in Ireland, are proud to hail your Excellency's arrival in Belfast, and most heartily express our satisfaction at the visit of a nobleman whose exertions on behalf of this country have added fresh lustre to his distinguished station as representative of her Most Gracious Majesty the Queen.

"When we consider the unprecedented combination of difficulties which has occurred during your Excellency's Viceroyalty, we admire the superior ability which has enabled you to surmount them, with honour to yourself and safety to the country.

"In the fostering spirit with which your Excellency has aided this Society, we recognise the extended views of the Statesman, looking into the future, and anticipating the vast benefits which must arise from rendering available the sources of wealth with which this country abounds; and we gratefully acknowledge that it is mainly owing to the substantial assistance afforded by Government, on your Excellency's recommendation, that the Society has been enabled to extend its operations to the South and West of Ireland, and to diffuse that information and instruction which, we are satisfied, has been of essential service to those districts.

"We have long been persuaded that, in the cultivation of flax, a great mine of wealth exists in this country, to which we have laboured to direct the attention of its people. We have pointed to the vast sums of money which are annually sent to foreign countries for the products of the flax plant, and have shewn that the soil and climate of Ireland are eminently calculated to produce an almost unlimited supply. We have called attention to the fact that its production will not only retain this wealth in the country, but will also employ the population, who are now driven to foreign lands, to seek that field for their labours which would thus be abundantly afforded to them at home. It is a source of peculiar satisfaction to us, that your Excellency has so fully recognised the value of these views, and has so frequently advocated them.

"We cannot omit this opportunity of acknowledging, in the warmest manner, in common with the people of Ulster generally, the lively interest you have taken in the prosperity of the different branches of the Irish linen trade, and the exertions you have made for the removal of restrictions and the modification of injurious tariffs, in order that our industrial products may enter into fair and open competition with those of other countries.

"Your comprehensive views have extended, also, to artistic embellishment, by promoting the formation of Schools of Design, where the taste of the youth of Ireland may be properly directed and cultivated, and by which our manufacturers may be enabled to give the most finished ornament, without being dependent on the decorative skill of foreigners.

"In conclusion, while reiterating the expression of our gratitude for your Excellency's warm and powerful advocacy of our views, and your constant endeavours to inculcate habits of industry and self-reliance among the people of this country, which have so greatly tended to aid our efforts, we trust that we may have future opportunities of receiving you in Belfast, where we know that your exertions for the improvement of Ireland are fully appreciated;

and we sincerely hope your life may be long spared, to assist in guiding, by your wisdom, the councils of this great empire.

"WM. SHARMAN CRAWFORD, M.P., Chairman."

His Excellency then read the following reply, and, in doing so, he dwelt with such emphasis on the various points to which he referred, that it was evident he had both deeply studied the subject and was warmly interested in it:—

"GENTLEMEN,—I beg to thank you for your kind welcome to Belfast, and to assure you that nothing can be more gratifying to me, as the representative of our gracious Sovereign in Ireland, than to be considered instrumental in carrying out the benevolent wishes of her Majesty towards all classes of her Irish subjects.

"Ever since my arrival in this country, I have observed with pleasure the meritorious efforts of your Society to extend the growth of flax by diffusing the information and instruction necessary for its proper cultivation, and towards this national object I thought it my duty to procure for the Society the assistance of which it stood in need. The great and growing importance of flax in Ireland cannot, in my judgment, be over estimated; and the more we consider it in its agricultural, manufacturing, and commercial bearings on our welfare, the more apparent will, I think, become the necessity and advantage of its extended cultivation in a country whose soil and climate are so peculiarly adapted to its production. I rejoice, however, to think that attention is now generally turned to this subject, and at a moment when flax is most likely to be remunerative to the grower. The demand for our linen manufactures is rapidly rising, and the supply of cotton is not only deficient, but, owing to various circumstances, I fear that this supply will, henceforward, not be equal to our demand, and that we cannot reckon upon the quantity of cotton we require at the prices which will enable us to extend our manufactures, or even to keep them up to their present amount. But, by extending the growth of flax, we may not only benefit the manufactures of Ireland by a more abundant supply of raw material, but we may also furnish the manufacturers of cotton—not with a substitute, but with an auxiliary to cotton—with a material which may liberate cotton from some of its present uses.

"The agriculturist has thus a double market for this production, and one which never can be overlooked; and if this vast field for his industry be turned to proper account—if he rears more cattle, feeds them upon the green crops, which are more luxuriant in Ireland than in any other country, and fattens them upon flaxseed—he will be able to manure and fertilise his land, and impart to it a value it has not hitherto reached, while the agricultural and manufacturing interests will thus be brought into harmonious action with each other.

"The spread of civilisation, and the facility with which the people of different countries now communicate with each other, are daily giving rise to new ideas and new wants; textile fabrics will soon rank among the first necessities of the world, and to obtain them better and cheaper will be the demand of millions who are now unable to afford the use of them. Much progress has already been made, for, owing to the reduction of prices caused by improved machinery and more economical processes, our cotton manufactures have increased 1,284 per cent. in the present century, while linen manufactures of all kinds have, within the last eighteen years, fallen 50 per cent. in price, and the manufactures have increased in proportion; but enough has not been done towards producing from the soil of Ireland this raw material for Irish manufacture, which may be grown better and more cheaply here than abroad—(applause)—and we know that not only a sum of four millions a-year is paid for foreign flax, but I find that, in the last ten years, the enormous quantity of 13,650,000 cwts. of flax, 9,300,000 qrs. of flaxseed, and nearly 700,000 tons of oil-seed cake have been imported. I have entered into these details, as I was anxious to state the reasons why I attach so much importance to the growth of flax, and why I think it should engage the attention of all who have at heart the agricultural and manufacturing progress of Ireland. (Applause.)

"From the obstacles we have ourselves experienced in adopting a liberal and enlightened system of commerce, you may judge of the difficulty that exists in inducing foreign Governments to abandon their prohibitory or protective tariffs; but I cannot doubt that our example must be followed—(hear)—and in the meanwhile, you may rest assured that her Majesty's Government will use their best exertions to remove or lessen the duties that press injuriously upon our production in foreign countries. (Hear, hear.)

"It was a matter of great satisfaction to me to aid in the establishment of a School of Design in Belfast, which, I feel sure, will realise the anticipations we have formed of its usefulness. I beg you to accept my thanks for your kind expressions towards myself, on the present occasion, which, I trust, will not be my last visit to this great emporium of Irish industry." (Loud and repeated cheers.)

His Excellency, immediately after receiving the address of the Royal Irish Flax Society, walked along the quadrangle of the Hall, accompanied by the Lord Bishop of Down, the Earl of Erne, the Committees of the Hall and Flax Society, and a vast number of gentlemen of the town and country, to the establishment of Messrs. S. G. Fenton & Co., where his Lordship was received by Mr. Lowry and Mr. Grogan (in the unavoidable absence of Mr. Fenton, in England), and immediately conducted by these gentlemen into the private office, in which her Majesty received two addresses on the memorable occasion of her visit to the Hall, in 1849, a memorial of which is suspended from the wall, underneath the portraits of the Queen and Prince Albert. Attended, as he had entered, his Excellency was now introduced into the several departments of this magnificent establishment, and examined, with the greatest interest, the various specimens of yarn submitted to his inspection; and, making many minute inquiries, listened with the deepest attention to the explanations given. It would be difficult to convey to strangers any adequate description of it, together with the celebrated linen department of Messrs. Sadler, Fenton, & Co., which occupies two floors of 517 feet—is intersected with a great number of arches, and presents long vistas of handsome arcades. His Excellency in passing through these establishments, would be able to form some conception of the magnitude and importance of the linen trade of Ireland.

Messrs. Sadler, Fenton, & Co.'s splendid and beautiful stock, adapted for the home and foreign trade, was arranged with the greatest judgment and taste; and, as a large order was in course of preparation, his Lordship had an opportunity of observing the varied styles in which goods are ornamented for foreign markets. On his Excellency's attention being directed to the cambric handkerchiefs, the manufacture of Mr. James Malcolm, of Lurgan, Mr. Grogan observed that the low qualities were furnished in quantities to the English drapers; but the French still excelled us in production of the finer qualities. On his Lordship asking the reason of this, Mr. Grogan replied that the French devoted more care and attention to the finer descriptions than we had done; but he doubted not that we should speedily overtake our rivals in the production of the very finest qualities of this article. After spending nearly half an-hour in this establishment, his Excellency was conducted to the private office of Mr. Fenton, where he left his autograph in the visiter's book.

The *cortège* then left the Linen-hall, the Mayor's carriage preceding that of his Excellency, which was followed by five private carriages containing the office-bearers of the Royal Flax Society, who had the honour of arranging the objects to be visited for the rest of the day, in illustration of the different processes of the linen manufacture.

VISIT TO MESSRS. MULHOLLAND'S MILL.

His Excellency was, at three o'clock, received at the mill by Messrs. Andrew and S. K. Mulholland, who were in waiting to conduct him through the establishment. Her Majesty's representative was welcomed with loud and protracted plaudits as he crossed the principal entrance. A few flags floated from the pillars of the gates, and from commanding positions in the quadrangle of the building. Save these, the concern wore its every-day aspect, and business was carried on, in all the departments, as if the representative of Royalty had been at the Viceregal-lodge, in the Phœnix-park. The intentions of his Excellency, in visiting the mill, and in witnessing the immense variety of processes undergone by the flax plant, up to the point where the fibre is produced in the market, in the form of yarns of all qualities and degrees of fineness, were thus realised much more effectually than they could have been by the adoption of a different course.

A description of the immense and magnificent establishment of the Messrs. Mulholland is not necessary. Seen every day, its gigantic proportions, the extraordinary amount of labour which it affords, and the still more extraordinary manufactures which its produces, have ceased to excite the astonishment of our fellow-townsmen; and its business transactions with the leading merchants of this country, of the sister kingdom, of the entire Continent of Europe, and, indeed, of almost every commercial port in the globe, having secured for it a standing and a name which require not the aid of mere complimentary remarks to establish its relative superiority. Though a description of the building itself might be deemed superfluous, there are a few facts in connexion with it which, it may be taken for granted, are not generally known, and which are likely to prove interesting. There are, at the present time, engaged in the flax-spinning trade in Belfast and its vicinity, about thirty mills, which employ thousands of the population. The oldest and principal one of them is that which the Lord Lieutenant favoured with his presence. The Messrs. Mulholland were the first to introduce, in Belfast, the spinning of linen yarn by machinery; and some idea may be formed of the success of the experiment, when we state that their establishment affords constant employment to upwards of 1,200 persons; that its annual expenditure, in wages alone, amounts to about £20,000; and that it consumes, annually, about one thousand tons of flax, producing about 450,000 bundles of yarn, at an estimated value of from £100,000 to £110,000. These figures, though large, represent merely one department of the manufacturing enterprise of the spirited proprietors. The Messrs. Mulholland are extensive spinners—they are still more extensive manufacturers, as they manufacture more than they spin. From the simplest and roughest elementary process, to the completion by bleaching, printing, ornamenting, and exporting, all is carried out by themselves. The direct and indirect employment thus given by these gentlemen is enormous, and, as it may be said to be confined to our own countrymen, 15,000 of whom, within a circuit of fifty miles round Belfast, are engaged by them as weavers, the social and national advantages conferred cannot be too highly estimated. The following figures will shew the transactions of the establishment in the linen manufacture, during the six months, ending June last, the first column pointing out the receipts of webs of linen cloth—each web averaging sixty yards—during the period mentioned, and the second the receipts of bleached cloth, during the same period:—

BROWN.		BLEACHED.	
January,	7,576	January,	8,565½
February,	8,093	February,	9,539
March,	9,515	March,	13,549½
April,	7,506	April,	10,896
May,	11,323	May,	11,717
June,	11,624	June,	16,015
	55,637		70,282

With the above bare statement of facts, which themselves abundantly attest the extraordinary character of the Messrs. Mulholland's concern, we resume our narrative of his Excellency's visit. Having passed through the main entrance, the Viceroy was conducted across a large area to the flax store, an immense fire-proof building, in which were contained about 600 tons of flax, principally the produce of foreign countries—a circumstance with which the worthy proprietor did not fail to make his Excellency acquainted, adding his own views as to the superior character of the Irish plant, and his regret that it is not more generally and more extensively cultivated. Several tables were laid out with specimens, in the rough state, of Irish, French, Dutch, Flemish, Riga, and Egyptian flax, for the inspection of the noble visiter, who examined them evidently most minutely. From this department his Excellency was next ushered, by a short passage, into the roughing rooms, and thence into the hackling and carding rooms. With the latter his Excellency was evidently much gratified, and not a little astounded, especially at the amazing operations of the self-acting hackling machines. He was then conducted to the preparing room, which occupies the entire basement story of the mill, and engages the attention of about 120 females. The immense display of machinery, kept in the cleanest possible condition—the quick play of the spreading and drawing-frames, and the quicker movements of the roving-frames, brought to a stand-still, as if in a minute, by the hands of a mere child, and in another moment, as if by magic, driven into the highest velocity, seemed not a little to excite the curiosity of his Excellency, who closely scrutinised the entire operations. The noble Earl was then conducted through the four immense spinning-rooms, with the neatness, regularity, and order of which he expressed himself greatly surprised He was thence led, by a winding stair, to the reeling-room, and from thence again to the engine-room, a magnificent building—quite a model in its way, and kept remarkably clean. In this apartment are two beautiful and powerful engines—one of them, a condensing engine, manufactured by Messrs. Coates & Young, of Belfast, and said to be the largest and best in Ireland. It is of 70-horse power; indicates 202; has a 22 feet 6 inches walking-beam, a 23 feet 4 inches connecting-rod, a 45 inch cylinder, and a stroke of upwards of 7 feet. The second engine, which is also an exceedingly handsome one, was manufactured by the Messrs. Ormerod & Co., of Manchester, is of 68-horse power, and indicates 150. His Excellency, who expressed himself in terms of the highest admiration of this department of the extensive premises, was next conducted through the yarn store, in which, having been told that the yarn was boiled in alkali before being manufactured, he inquired to what use the lye was afterwards appropriated. He was told that it was not afterwards used, when he pointed out its value as manure. He was then led through the web store, and other buildings, to the lapping rooms, where a large number of tables were tastefully laid out with linens of the richest description, in every variety of fold and ornament, and ready for shipment to the foreign markets. These tables bore each the peculiar characteristics of folding demanded by the countries to which they are consigned. His Excellency inspected each minutely, and expressed his great satisfaction with the arrangements and designs. In the white lapping room, which contained a very fine display of linens, his Excellency particularly noticed the new style of plaited shirt-fronts, woven in the the manufacture of Mr. Lindsay, of Ashfield, Dromore, and some of which were presented to his Royal Highness Prince Albert, on the occasion of the Royal visit to Belfast. These beautiful articles, which display in a remarkable manner the perfection to which the linen manufacture has been brought, arrested the attention and admiration of all in the room. On leaving the concern, his Excellency highly complimented the proprietors.

CREGAGH.

His Excellency arrived at Cregagh at half-past four, and was received by Messrs. Bernard, Koch, & Fiers, the proprietors. The seeding process was first shewn to his Excellency, by which the seed is separated from the plant. The machine which performs this is very simple, but very effective, and can work from four to five tons of flax per day, with five or six attendants. The quality of the flaxseed of this year's growth appeared to be exceedingly good. His Excellency particularly inquired if the fibre was as good when the plant had been allowed to mature seed like that. He was gratified to learn that by the patent steeping process the quality of the fibre was made as fine as when the seed was not preserved. The steeping-house was next visited containing twelve large oval vats, which shewed the various stages of the process of steeping, some being in full fermentation, some only beginning to get heated. After steeping, the flax is taken to open sheds, where it is dried. His Excellency examined the whole with great attention, and shewed, by his remarks, that he was well acquainted with the usual method of preparing flax; he expressed his gratification at seeing improvements which must tend strongly to the extension of flax cultivation. He was taken to the scutching-mill, where a new self-acting scutching-machine, made at the Soho Foundry, was at work, and appeared to work satisfactorily. His Excellency expressed his warmest wishes for the success of this establishment, and for the speedy extension of the system all through Ireland. On Friday morning, a web of brown linen, made from some Cregagh patent flax, and woven by Mr. W. Craig, on his power-looms, was shewn to his Excellency, who was pleased to express much satisfaction at seeing the superior quality of that fabric. His Excellency, before leaving, inscribed his name in the visiters' book.

VISIT TO GLENMORE.

His Excellency having intimated his desire to pay a visit to the premises of Messrs. Richardson, at Glenmore, immediately on returning from Cregagh to Belfast, proceeded to the Ulster railway station, where a special train was in readiness to convey him to the extensive bleach-works of Messrs. Richardson, Sons, & Owden, at Glenmore, near Lisburn, which arrived opposite the works in about eight minutes from the time of starting. A platform had here been erected for the occasion by the side of the railway, covered with fine sheeting; and over the temporary entrance into the green a handsome arch had been thrown, tastefully decorated with flowers. From the platform, which was erected on a ridge directly overlooking the green, a beautiful and extensive prospect was obtained of the surrounding country, embracing the valley to Belfast on the left, the County Down hills in the distance, and extending to Hillsborough on the right—the extensive bleaching grounds in front, divided by the River Lagan, and covered with the snow-white fabrics, appearing, under a serene sky, to singular advantage.

On alighting from the carriage, his Excellency was received with loud plaudits by a numerous party of gentlemen and ladies, who had been here waiting his arrival. His Excellency and suite, conducted by Messrs. Jonathan, Joshua, and William Richardson, then proceeded through the bleach-grounds, which were covered with various descriptions of linens, damasks, cambric handkerchiefs, &c.; and, passing the large filtering dams reached the boiling-house, where his Excellency examined brown linen going through the first process of steeping, and afterwards boiling in British alkali. From thence the party proceeded to the washing mills and rubbing machinery, and the buildings in which the various other processes are carried on, his Excellency making many inquiries as he proceeded. The party next visited the starching and blueing-houses.

His Excellency's time was too limited to admit of his being conducted through the mechanic workshops, where, we understand, the most of the machinery required by this enterprising firm is manufactured on the premises.

Four carriages being in waiting, his Excellency and suite next proceeded to the finishing works belonging to the same firm, at Millbrook, in the immediate vicinity of Lisburn, where they were shewn the various processes of drying and beetling linen and finishing cambric handkerchiefs. His Excellency was next conducted through the room containing the brown goods, as received in the rough state. In the course of his inspection his Excellency made many minute inquiries relative to the different processes and operations, and expressed himself much pleased with all he had witnessed. At this place a very large water-wheel and a powerful steam-engine were working in concert in driving the various machinery. The special train was in waiting at the Lisburn station, to convey his Excellency back to Belfast, where he arrived about a quarter past six, having been absent only fifty minutes, in which time he travelled sixteen miles, two of them in his carriage, and inspected the whole of this extensive concern—an amount of despatch which shews the facilities for travelling afforded by railway communication.

PARTICULARS

OF THE

FLAX CROPS OF FIFTY-ONE FARMERS,

IN THE NEIGHBOURHOOD OF NEWRY, COUNTY DOWN, 1850.

For the following table the Society is indebted to Mr. William Dawson, of Bessbrook, near Newry, and was accompanied by the following remarks:—

Bessbrook, 27th of 11th Month, 1850.

I send thee herewith an account of the management of flax by fifty-one farmers, stating every particular respecting soil, labour, &c., &c.; and, although it is acknowledged by all to have been a very unfavourable season for the crop, the profits of some have been large, yet to others it has been a losing business; however, thou wilt observe that the average gain has been 7*l.* 1s 4½d per acre. I have been making particular inquiry into the cause of the great failure in some few cases, some of which were;—sowing immediately after deep ploughing, or digging with the spade, which left the ground too open underneath, so that the drought got down; not having the ground well harrowed and rolled, before sowing, to settle it pretty firmly down, and the surface at same time not being sufficiently fine. If the surface is fine, although firm underneath, rolled before sowing, and lightly rolled after, and gentle showers succeed, so that the flax comes up nearly at the same time (as a second or after growth is worth little), there is a prospect of a fair crop; but, should very heavy rain come on, immediately after sowing, so as to run the mould into a crusty state, it should, if possible, be broken before the flax comes up, either by gentle harrowing or rolling. Some crops have been a total failure by not attending to this. I inquired particularly about watering and grassing, as it is of immense importance, when both are sufficiently done. After being in the water five or six days, it should be examined. If the reed breaks quite short, as if it was rotten, and if it feels quite soft when pressed between the finger and thumb, and very freely parts from the fibre (flax), then it is sufficiently watered. No. 1 told me, when the fermentation ceased, and the flax settled down in the water, he took all the stones (or pressure) off, to give it liberty to rise, so that it might not be so much pressed together, which he thought was much in its favour. He kept it so long in the water that some of his neighbours thought he would injure it. It is time to lift off the grass when the fibre, *of itself*, parts freely from the reed (or shove), which should feel soft, and very easily separate when rubbed in the fingers. The great difference of time it has to be kept in the water and on the grass cannot be accounted for. Notwithstanding the unfavourable season for flax, no crop will pay so well. Thou wilt observe that the farmers are not saving seed, as it requires extensive loft-room; for the wetness of our climate makes it dangerous to expose it to the sun; and it is generally thought that by letting the seed sufficiently ripen injures the flax. How far this is the case I cannot conjecture.

I don't know whether thou wilt set any value on the information contained in these papers; however, receive them as thou mayest, I shall rest satisfied, and am thy friend,

WILLIAM DAWSON.

P.S —One farmer was offered a price for his flax of 13s per stone, which he refused taking. He had, off two Irish acres, 122 stones, which would, at the price offered, amount to 79*l*. 6s.

THE PROBABLE EXPENSE OF ONE IRISH ACRE OF FLAX.

Two ploughings—4 days, at 7s per day,	£1	8	0
Harrowing—1 day,	0	7	0
Rolling before sowing—half-day horse,	0	1	6
Cost of seed—3½ bushels,	2	5	0
Buying seed—man and horse,	0	3	0
Sowing—half-day of man,	0	0	6
Rolling after sowing—half-day horse,	0	1	6
Weeding—10 days women, at 8d per day,	0	6	8
Pulling—10 days women, at 8d per day,	0	6	8
Tying—1 man,	0	1	0
Rush Ties,	0	3	0
Drawing to, and covering in, water—1 horse and 3 men,	0	5	0
Drawing from water—1 horse and 3 men,	0	5	0
Spreading on the grass—8 days women, at 8d per day,	0	5	4
Lifting off the grass—5 days women, at 8d per day,	0	3	4
Man tying,	0	1	0
Taking to mill—1 horse and 2 men,	0	4	0
Making handfuls at mill—1 woman,	0	0	8
Mill—say 46½ stones, at 1s per stone average,	2	6	6
Taking to market—man and horse,	0	3	0
Tithe,	0	1	6
Poor Rate,	0	1	0
Two County Cesses,	0	4	0
	9	4	2
Drawing from mill,	0	3	0
Rent,	1	15	0
	£11	2	2

Average sale,	£18	3	6½
Expense,	11	2	2
Gain, per acre,	£7	1	4½

If they had far to draw to and from the water and mill, the expense would be greater; and in proportion, more or less, to the weight of the crop, distance of water, distance of spread-ground, distance of mill, and distance of market.

TO THE COMMITTEE OF THE ROYAL FLAX IMPROVEMENT SOCIETY.

HAVING, from an early period, taken a lively interest in the improvement of the culture and of the treatment of flax, and having had, personally, the opportunity of inspecting the processes in use in the flax-growing countries of the Continent, I have deemed it peculiarly my duty, as a member of the Committee of the Flax Improvement Society, to render such aid as might be in my power in testing the merits of the new mode of steeping proposed by the late Mr. Schenck.

It seems peculiarly desirable to remove from the character of this system all doubt and uncertainty, as it promises, if it be found to realize the advantages promised by its projectors, to place the management of the flax crop on that footing of uniformity and regularity to which the success of Belgian culture is so much to be attributed. It seems a necessary condition of the general application of this system, that it be conducted on an extensive scale, by capitalists who shall purchase the flax from the grower as is done by the flax dealers in Belgium; and, it may be hoped, from the success which has attended the early attempts at the introduction of the system in this country, that the steeping-vats of Mr. Schenck shall more than countervail the advantages derived by the Belgians from the famed waters of the River Lys.

It is scarcely necessary to advert to the obvious advantages which will result from the uniform action of extensive establishments for the treatment of flax. The supply of large quantities of flax, of similar colour and quality, to the spinner, would be of immense advantage, even were the quality no better than under the ordinary treatment; but, when the attainment of a decided superiority of quality and yield is superadded, accompanied by the inestimable value gained by preservation of the seed, hitherto almost entirely lost, the object assumes the character of national importance. It is also matter of pleasing contemplation, that the prospect of improvement opens upon us at the very moment in which the wants of the country, arising from the position of the cotton trade and the insufficient supply of its raw material, have been demanding the extended production of our Northern staple, which is already being applied to the manufacture of fabrics of much greater variety than were, till lately, thought of. If the farmer can only now be induced to do his part, by rivalling the Belgian flax grower in the draining, deepening, pulverizing. and cleaning of his soil, and in the application of liquid manure, for the purpose of stimulating the early growth of the tender plant, during the season in which a parching drought is often found to check it, to a degree not afterwards to be remedied, or by calling in the aid of the chemist, to supply him with such artificial compounds as the discoveries of science may enable him to prescribe, there seems no reason, though our climate may not, in all respects, be equally suited with that of Flanders for the production of the finest flax, why the soil of Ireland should not be made to supply the raw material in any quantity which the rapid growth of our staple manufacture may require.

I rejoice, then, in being enabled to state to the Society that, though on some points I may at first have entertained doubts, the result of my experiments, as detailed in the accompanying table, have convinced me that great advantages may be realized from the use, subject to proper limitations, of the system under consideration.

My views have been directed to the discovery of the conditions under which productiveness, fineness of fibre, and durability, may be combined.

For the credit of the trade, I trust the manufacturer will never be induced to sacrifice the character of family linen for the attainment of a superficial and deceitful appearance of smoothness and beauty. I should lament to see the flaxen fibre tortured into a state in which it could be made to pass into thread by the action of cotton machinery, losing almost entirely the character of linen, and perhaps, ultimately, falling short in value of the substance for which it would seek to be a substitute. I shall still hope to find Irish linen supporting its essential characteristic of strength and durability; and this, I believe, need not be sacrificed, under the proposed mode of treatment, if the temperature be kept within moderate limits—a temperature not lower than 80 degrees, nor exceeding 90 degrees, of Fahrenheit (my experiments indicating that 80 is the preferable degree), will, I believe, be found to afford the largest produce, with unimpaired strength of fibre, and a degree of fineness at least equal to that produced by the more speedy but dangerous and weakening temperature of 98 degrees. At the temperature of 65 degrees the most marked inferiority, in every respect, was observable in my experiments. I am, therefore, enabled to recommend that the temperature be confined within the limits I have mentioned. My experiments have also established another point, for which I was not unprepared, that exposure to the sun, and drying upon the grass, vastly improve the fibre. The lengthened term of exposure on the grass, in use in Belgium, on the banks of the Lys, is regarded as indispensable in the production of the very fine flax of that country; and it was only to be expected that, to some extent, it would be found serviceable, though not absolutely necessary, even under the new system.

I am clearly, therefore, of opinion that, when the state of the weather shall permit, it will be found very conducive to the improvement of the quality to spread and turn the flax on the grass, after having been first a little dried by setting the bundles on end, to give firmness before spreading; and that, though drying in sheds may answer tolerably well, when no better can be done, during the Winter season, the spreading and turning on the grass will be found eminently serviceable during the Summer.

With these observations, I submit the annexed tabulated results of my experiments to the Society. They are, on the whole, very satisfactory to my own mind, as they have impressed me with the conviction that much has been already effected, and with the hope that very much more may be achieved, in the improvement of the material, and the consequent advancement of the branch of industry which is so vitally important to our struggling community.

WILLIAM G. ANDREWS.

Comber, December, 1850.

EXPERIMENTS,

By William G. Andrews, on the Steeping of the Flax Crop of 1849 (secondary in quality and fineness), in water heated by steam, as specified in the Table; the half of each parcel dried in a shed, on Mr. Schenck's system, and the other half spread on the grass, as practised in Flanders. Also, a similar quantity steeped in water taken from a river (without steam), at a temperature of 60 to 65 degrees, the half dried in a shed, and the other half spread on the grass. The table calculated at the rate of 100lbs. of dry green flax for each parcel, before steeping.

Comber, 28th November, 1850.

When Steeped.	Quantity of Green Flax.	Temperature.	Time in Steep.	Spread on Grass.	Dried in Shed.	Beets dried on end to firm the fibre.	Time on Grass.	Time in Shed.	Loss of weight by steeping—Grassed.	Quantity of dried straw—Grassed.	Produce from dried straw—Grassed.		Loss of weight by steeping—dried shed.	Quantity of dried straw from shed.	Produce from dried straw in shed.		OBSERVATIONS.
											Flax.	Tow.			Flax.	Tow.	
	Lbs.	Deg.	Hours.	Lbs.	Lbs.	Hrs.	D. H.	D. H.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	lbs. oz.	
No. 1. Monday, 29th July...	100	98	53½	50	50	11	9 7	11 4	7 3	42 13	7 8	1 4	5 8	44 8	9 1	0 15	450 gallons of water used to each of these 100lbs. of flax in the steeping-vat. The temperature fell from 12 to 14 degrees by night, and 8 to 10 degrees by day; and each night and morning was heated to the proper degree.
No. 2. Monday, 29th July...	100	90	63	50	50	9	8 23	11 20	6 9	43 7	9 14¾	1 4	9 1	40 15	9 1	0 15	
No. 3. Monday, 29th July...	100	80	86	50	50	10	8 0	9 20	10 0	40 0	9 1	0 15	7 8	42 8	7 10½	0 15	
No. 4. Monday, 29th July...	100	60 to 65 no stm.	D. H. 13 19	50	50	7	8 21	8 21	10 0	40 0	5 0	3 12	7 8	42 8	3 14¾	2 10	This trial was a failure. Only 160 gallons of water used. The low temperature not successful. The same quality as this, steeped in a pool in the earth, on the old plan, did better.
WATER USED FOR STEEPING A SECOND TIME.																	
No. 5. Thursday, 1st Aug....	100	90	Hours. 75¾	50	50	15½	7 4	7 0	8 12	41 4	8 12	1 6¼	7 8	42 8	8 4½	0 15	This trial was darker in colour, took longer time to water, and more difficult to judge, when properly steeped.
PROOF EXPERIMENT OF THE BEST AND WORST OF FORMER TRIALS WITH CROP OF 1850.																	
No. 6. Thursday, 19th Sept.	100	80	91¾	50	50	6	2 0	4 0	10 0	40 0	9 1	0 5	8 8	41 8	9 2½	0 5	The quality of green flax of these two parcels was better than 1849 crop, and confirms the result of No. 3. This trial much better than No. 4, owing to use of large quantity of water in steeping, and more regular temperature by heating with steam.
No. 7. Thursday, 19th Sept.	100	65	D. H. 7 15	50	50	8½	10 1	10 1	10 0	40 0	8 7	0 12¾	10 0	40 0	6 11¾	0 15	

Notes.—No. 3. Best trial; finer ends, nice colour, unbroken fibre, finer quality of tow, easier managed in steeping and cleaning. No. 2. Second in quality. No. 1. Third quality; softer fibre, more towy and less oil than No. 3, and will yield less yarn. No. 4. Failure—only trial without steam, and only trial with 160 gallons of water in the steeping-vat. No. 5. Steeped in the water previously used in experiment No. 2.—(*See observations.*) Shed-dried always inferior in quality to grassed. No. 6. This proof confirms the result of No. 3, though steeped at a more unfavourable season. No. 7. Much superior to No. 4; slightly injured by hail storm on grass.

EARLY SOWING.

THE following results of the experience of a gentleman in County Derry, shew the advantage of sowing flax at as early a period of the season as the weather will permit:—

Believing that every information respecting flax culture is valuable to a Society such as yours, I am induced to submit to you the result of an experiment in early sowing, this year. I am led to state it now, instead of waiting till the crop is marketable, because I am enabled to forward a sample of the present state of the crop, and thus apply the test of fact to a theory which is much questioned, and which the peasantry, especially, are greatly disinclined to adopt.

On a small scale, I have been, for many years, a cultivator of flax (when I say on a small scale, I mean from one to perhaps five acres per annum.) I have inclined always to early sowing, from an observation of my own, that the flax, for the most part, blooms in the month of June, no matter when sown, and grows comparatively very little afterwards. This year, however, I was led to make the experiment much earlier than what I had hitherto considered early, induced by the very dry weather of the month of March, and anticipating (on, indeed, no better authority than the weather-table in Thom's Almanac) that April would be a particularly wet month, and likely to interfere with all labour, but especially that connected with flax. I, therefore, sowed somewhat more than half an Irish acre on the 18th March, a sample of which I send herewith. It is not by any means a selected stalk; it has been pulled at a venture, and measures twenty-nine inches. The other stalk is from a second half-acre, sowed the 20th April, which, by many, is considered rather early than otherwise; it measures twenty-one inches. Both sowings were on stubble—the earlier, wheat stubble after potatoes on old lea; the latter, oat stubble on lea, without any previous manure crop. It will be recollected that we had severe frost and deep snow, this year, after the 18th March, so that here is indisputable proof that flaxseed is not injured by frost. Whether frost coming later upon the forward young plant would do it injury may, perhaps, be questionable, but I can testify that mine was well budded, in fact all but abraird, when it sustained the storm unscathed. I laid it down with cloverseed, which also escaped without injury. The crop is now a very beautiful object, even in growth and healthy in colour. The seed was Dutch, and sown rather heavy, about 17 pecks to rather more than one Irish acre. I shall have pleasure in communicating the final result, when the crop reaches the market.

Absence from home has prevented my sooner replying to your inquiries respecting the results of my flax crop. Before proceeding to detail them, I may observe, that in this district, and (I am inclined to think that the remark will be found to apply generally), the crop of flax has by no means fulfilled the expectations which were formed in the earlier part of the season. It has been found to yield poorly at the mill, and to require very severe scutching to produce a fine fibre—of course diminishing very sensibly the produce, if a high-priced sample was desired. In my own case, I attribute this result to a heavy rain, of some days' continuance, at a critical period in the middle of July, just when my earliest flax had hard-bolled. It was at that time within a trifle of the prodigious length of five feet—fully four feet eight or nine inches on the average. Prostrated by the rain, its own luxuriance precluded all chance of its rising again. The chicken-weed conquered it, and so it not only failed to *gather meat,* as the country people term it, but very soon what was undermost began to taint; and the mischief proceeded so rapidly that I was forced to pull it on the 24th July (considerably sooner than I could have wished), in broken weather, when I could not venture to ripple it. This flax, as might be anticipated, proved very soft at the mill. To clean it as effectually as I could have wished would have reduced it sadly in bulk. I was contented, therefore, with a rather less finished article, and obtained, from my 8½ pecks, 30 stones, which fetched 8s per stone in Cookstown market. The second sowing was circumstanced very similarly to the first. It, too, had failed to gather meat when it lay down, and the fermenting process also began to tell upon it. However, I did not pull it till the 7th August, and took advantage of a few comparatively fair days to ripple it. This flax had not acquired anything like the length and bulk of the other. At the mill I obtained, from just the same quantity of seed, but 23½ stones, which, at market, produced only 7s 9d per stone;—not that the quality was materially different, but sales had become a little languid. From this you perceive that, although from unforeseen causes, neither result was as favourable as might have been expected, the advantage was decidedly in favour of the early sowing. The same misfortunes befel it under more advantageous circumstances—it had acquired greater length, and, by the great bulk of straw, compensated in some degree for the defective yield. I should mention, that I kept a faithful account of every farthing expended, and the final result is *a clear profit* of 14*l.* on the one acre sown. It is plain that, under more prosperous circumstances of weather, &c., this might have been considerably greater; but still, I know of no other sort of crop which, this year, would have paid nearly so well.

I need scarcely say, that, under the conditions I have described, it was impossible to save the rippled bolls for seed; I have, however, a great bulk of most valuable feeding from them. And, in conclusion, I will mention what seems to me a very curious circumstance respecting them. In the corner of the field where the rippling-combs had been placed, there remained a small heap of seemingly crushed and rotten green bolls—perhaps the bulk of half-a-peck. I had as many of them raked together and brought home as seemed worth the trouble; and, in the course of a week or ten days, walking over the ground, I was much surprised at seeing the worthless residue germinating. I desired that they should not be disturbed, and there they have stood and grown ever since. I send you herewith two or three stalks, pulled this day, in intense, hard frost, and after several very frosty nights. Does not this seem to prove that the flax plant, even in an advanced and succulent state, is capable of resisting the action of frost, as my experiment proved the same fact as to the braird?

Query, too, does it not tend to shew that we lay too much stress upon very choice seed, or, at least, that home-grown seed can be saved under very much more unfavourable circumstances, both as to maturity and weather, than is generally imagined? I now regret very much that I did not make the attempt to save my bolls for seed.

ABSTRACT OF CONSTABULARY RETURNS OF THE BREADTH OF FLAX SOWN IN IRELAND, IN 1849.

COMPILED FOR THE GOVERNMENT, BY CAPTAIN LARCOM, R.E.

	Statute Acres.	
Province of Ulster.		
Antrim,	4,064	
Armagh,	5,181	
Cavan,	2,182	
Donegall,	12,662	
Down,	4,807	
Fermanagh,	1,015	
Londonderry,	11,438	
Monaghan,	6,775	
Tyrone,	9,527	
Total in Ulster,	——	57,651
Province of Leinster.		
Carlow,	22	
Dublin,	16	
Kildare,	21	
Kilkenny,	16	
King's County,	57	
Longford,	91	
Louth,	125	
Meath,	172	
Queen's County,	18	
Westmeath,	81	
Wexford,	115	
Wicklow,	7	
Total in Leinster,	——	741
Province of Munster.		
Cork,	458	
Clare,	179	
Kerry,	136	
Limerick,	94	
Tipperary,	59	
Waterford,	11	
Total in Munster,	——	937
Province of Connaught.		
Galway,	54	
Leitrim,	154	
Roscommon,	35	
Mayo,	524	
Sligo,	218	
Total in Connaught,	——	985
Total in Ireland,		60,314

EXTRACT FROM THE REPORT OF CAPTAIN LARCOM, PREFIXED TO THE AGRICULTURAL STATISTICS.

FLAX.—The extent of flax cultivation, in 1849, exceeded that of 1848 by 6,451 acres, on the aggregate of the whole country; although, in the Provinces of Leinster, Connaught, and Munster, the returns shew a considerable diminution,—this diminution having been more than compensated by the increase in Ulster alone, which amounted to 8,102 acres. The County of Donegall produced, in 1849, the greatest quantity of flax; but, in the County of Londonderry, its extent bore a larger proportion to that devoted to other crops, than in any other county in Ireland, the proportion being one acre of flax to every fourteen acres of arable land. In Donegall, it was one to eighteen; in Monaghan, one to twenty-one; in Tyrone, one to twenty-seven; in Armagh, one to thirty-three; in Antrim, one to fifty-six; in Down, one to sixty-four; in Cavan, one to seventy-eight; and in Fermanagh, one to one hundred and four. The following table shews the extent of flax cultivated in each Province, during the years 1847, 1848, and 1849:—

	ULSTER.	MUNSTER.	CONNAUGHT.	TOTAL.
	Acres.	Acres.	Acres.	Acres.
1847	53,701	1,156	1,811	58,812
1848	49,549	1,249	1,826	53,863
1849	57,651	937	985	60,314

NOTE.—In analysing these returns, it is interesting to observe to what extent the exertions of the Society, and the establishment of scutch mills and steeping concerns have influenced the culture of flax in particular localities of the new districts, as contrasted with larger areas. Thus, while in County Mayo, flax only occupies 1 acre in every 2,602, in the Ballina Union it occupies 1 in 1,276; in County Cork the proportion of flax is 1 in 4,031, while in the Skibbereen Union it is 1 in 939; and, in the Dunmanway Union, 1 in 878. In Tipperary County it is 1 in 19,215, and in the Union of Tipperary 1 in 6,333; in Wexford County it is 1 in 5,014, and in Gorey Union 1 in 3,700; in Queen's County 1 in 23,600, and in Abbeyleix Union 1 in 10,360.

EXTRACT

FROM

A PAPER READ BY G. R. PORTER, ESQ., F.R.S.,

SECRETARY OF THE BOARD OF TRADE,

To the British Association for the Advancement of Science, at its Edinburgh meeting, August, 1850, *entitled, "Remarks suggested by an Examination of the recent Statistics of the Cotton Trade in Great Britain."*

To those who reflect seriously, it must appear a matter of grave importance how any continued failure of cotton crops is to be met, and not only so, but also how a substitute is to be found for the hitherto constantly increasing amount of those crops; for it will not be enough to provide the same amount of employment as before for our continually growing numbers in a branch of industry, which, by its ordinary operations, necessarily brings forward those increased numbers. The uneasiness which it is natural to feel, under the circumstances here described, has led to the inquiry, as diligently and as carefully as opportunity has allowed, whether some substitute or auxiliary may not be called into action, which shall meet the evil that threatens us, and this, it is suggested, may be found in a kindred branch of manufacture—that of flax.

A very few years ago, when first anxiety began to arise concerning the prospects of our cotton manufacture, the resource which has just been named did not present itself. At that time, our linen manufacture had not made the progress by which it is at present marked—a progress proportionally equal to any that has been made at any time in the cotton manufacture.

If we compare the prices of linen in 1832, when the home market was secured to the manufacturer by import duties equal to 40 per cent. on the value, and in which year the bounties which had long been granted on the exportation of British linens finally ceased, with the prices in 1849, we find the following remarkable result:—

	1832.			1849.		
	s.	*d.*		*s.*	*d.*	
The same quality sold for	1	4	....	0	8¼	per yard.
" "	1	6	....	0	9¼	"
" "	1	8	....	0	10¼	"
" "	1	10	....	0	11¼	"
" "	2	0	....	1	0½	"
" "	2	2	....	1	2	"
" "	2	5	....	1	3½	"

shewing a reduction of cost amounting to nearly fifty per cent.

The making of cambric handkerchiefs in Ireland is quite a modern branch of industry. The following list exhibits the comparative prices, per dozen, in 1833, 1838, and 1848, of handkerchiefs of the same qualities:—

1833.		1838.		1848.	
s.	*d.*	*s.*	*d.*	*s.*	*d.*
8	3	7	0	2	10
9	3	7	9	3	2
10	3	8	3	3	6
11	6	9	0	4	0
12	9	10	0	4	6
14	3	11	6	5	2
16	3	14	0	6	0
18	9	15	6	7	3
21	3	17	0	8	9
24	0	19	0	10	6
27	6	22	6	12	6
31	0	25	0	15	0
35	0	28	0	18	0

shewing a reduction in the cost, during 15 years, of about 60 per cent., and, in the last 10 years, of 47 per cent., on the average of all qualities.

During the five years between 1844 and 1849, the reduction in the cost of 5-8 cambric handkerchiefs has been as follows:—

1844.		1849.		1844.		1849.	
s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
14	6	11	0	27	0	21	0
16	0	12	0	29	0	22	6
17	6	13	0	31	0	24	0
19	0	14	3	33	0	25	6
20	6	15	6	35	0	27	6
22	0	16	9	38	0	29	6
23	6	18	0	41	0	32	0
25	0	19	6				

This economy has been mainly effected in the spinning processes. A bundle (60,000 yards) of No. 40's line-yarn, the cost of which, in 1839, was 11s, was reduced, in 1848, to 4s 3d, or from 2s 2d to 10d per lb.—more than 60 per cent. During the same period, the fall in the price of cotton yarn, of about the same quality, has not quite amounted to 20 per cent. Since 1848, a rise in the price of flax has occasioned a corresponding advance in the price of yarn, and that which could then be bought for 10d per lb., is now quoted at 12½d.

Hitherto, we have in this kingdom been greatly dependent upon our foreign importations for supplies of flax, and, while the law imposed restrictions upon the importation of grain for human food, there existed a kind of moral impediment in the way of increasing our home growth of articles for any purpose not of equal primary necessity. That impediment is now removed, and there can be no reason given why our fields should not be henceforth used for the production of any article that promises an adequate profit to the farmer. It is especially desirable so to apply the productive power of the soil for the supply of articles as indispensable to the support of millions of our people as corn itself; and an additional inducement to the growth of flax, beyond that offered by other articles, may be found in the fact, that to bring it to the same condition as that in which it is usually imported from foreign countries, calls for the employment of a considerable amount of human labour. There is no part of the United Kingdom in which the flax plant cannot be successfully cultivated, and there is hardly any country whence it might not be brought to supply our deficiencies, should such arise. It grows and flourishes equally in the climate of Russia and in that of India. In Ireland a sustained effort has been made by "The Royal Society for the Promotion and Improvement of the Growth of Flax," to induce proprietors in that country to devote a portion of their land to its cultivation; and it is understood that, in the present year, a larger breadth has been sown with flaxseed in Ireland than in any former year. Great improvements in the processes employed for dressing the fibre are also now in course of adoption, and it is perhaps not taking too sanguine a view of the result of these efforts to believe that the reduction in the cost of the material, and in the expenses of the processes needful for its manufacture, will, for some time, go forward in at least as satisfactory a degree as we have seen to have been already realized.

We cannot determine the growth of the linen manufacture by the same test which satisfactorily shews that of the cotton manufacture—viz., the quantity of raw material imported—since a part of the flax—in what proportion there are no means of shewing—is produced from our own soil; but it will be evident, from the following figures, that a very rapid extension has been effected.

The quantity of foreign flax imported for use in the United Kingdom, in each year, from 1831 to 1849, has been as follows:—

	Cwts.		Cwts.		Cwts.
1831 ...	936,411	1838 ...	1,626,276	1844 ...	1,583,494
1832 ...	982,516	1839 ...	1,223,701	1845 ...	1,418,323
1833 ...	1,129,632	1840 ...	1,253,240	1846 ...	1,147,092
1834 ...	811,722	1841 ...	1,346,843	1847 ...	1,052,089
1835 ...	740,814	1842 ...	1,145,759	1848 ...	1,463,661
1836 ...	1,529,116	1848 ...	1,437,150	1849 ...	1,806,786
1837 ...	1,000,865				

It should not, in any degree, interfere with the prosperity of the present race of cotton manufacturers, if flax were to be substituted in part for the material now employed by them. Changes are, doubtless, necessary, in order to adopt a part of their present machinery for the spinning of flax, but the expense to which the proprietors might thus be subjected, would be well compensated, during the first year of short supply of cotton that might arise, by the security that they would feel in the future regularity of their operations, assured, as they then would be, against the irregularity of seasons, or those disturbances which have arisen, and which always may arise, to disarrange their operations, and to interfere with the regular employment of their hands. It would not appear difficult so to order the arrangements of a spinning-mill or a weaving-shed, that both flax and cotton might be included within its operations, and that the preponderance in those operations might be given, from time to time, either to the one or to the other, according to the capabilities of the markets of supply on the one hand, and the requirements of the markets of consumption on the other.

Goods are now woven in which both materials are employed. This description of cloth was produced in the looms of Flanders more than 400 years ago. Two centuries later, such mixed goods were made in this country, the cotton employed in the same being imported from Cyprus and Smyrna; it was not, indeed, till 1772, only seventy-eight years ago, that goods were made in England, the whole material of which was cotton. The progressive reduction in price of this material, so much greater than that which, until a comparatively recent period, has attended manufactures of flax, has hitherto caused the wonderful extension that we have witnessed in our cotton trade, an extension which has added most materially to the comfort of the labouring classes of this and other countries. So long as we could look with any degree of security to the continuance of this state of things, there could be no good reason for suggesting any change in our manufacturing arrangements; but now that a check seems to be given to the progress of the cotton trade, through uncertainty in the amount of supply obtainable, whether by reason of untoward seasons, or through the employment of constantly greater quantities of the material in the principal country of production, the old state of things is so far changed as to render it a matter of national importance to provide the means for meeting the difficulties thus presented, and it may be considered a very happy circumstance that those means are not far to seek, but that, through the adoption of some previous changes in the most strictly analogous branch of industry, the adoption of a remedy is rendered comparatively easy.

It must be satisfactory to us, in a high degree, to know that the reductions mentioned in the cost of our linen manufactures have not been accompanied with any distress on the part of the spinners and weavers, nor of loss among the manufacturers; but, on the contrary, that, during the period in question, the linen trade has been extended to a degree unexamplod in its previous history, affording greater and more profitable employment to every one engaged in it. An accurate judgment may be formed, concerning the progress of the trade by ascertaining the extent, at different periods of our exports. In 1832 we sent to our colonies, and to foreign countries, 49,531,057 yards of linen, valued at £1,716,084. In 1838, our exports reached 77,195,894 yards, valued at £2,717,979. In 1844, we exported 91,283,754 yards, valued at £2,801,609. And in 1849, the exports reached 106,889,558 yards, while the declared value amounted to £3,073,903. During the same period, our shipments to foreign countries of linen yarn have advanced in value from £8,705 in 1832, to £737,650 in 1849.

It must not for a moment be imagined that this subject is brought forward with any desire of fostering or encouraging one branch of manufacture at the expense of any other. The object in view is, in fact, the very opposite to such a desire, and springs from the wish to preserve, in its condition of prosperity and progress, one of the chief sources of employment for our continually growing numbers, without in any way interfering with any other branch of industry. It is hoped that the means here indicated may be found efficacious for meeting the difficulties that now threaten to obstruct the course of the cotton manufacture, without interfering with, or creating difficulties for the linen manufacture, by transferring, in part, the labour now bestowed upon one material to the conversion of the other. This could not be accomplished if the production of flax were, like that of cotton, in any great degree dependent upon the accidents of the seasons in one particular country, a disadvantage from which the cultivation of flax has always been free, while, of late, the obstacle which, morally, at least, stood in the way of its extensive production in the United Kingdom, has been made to disappear from our statute-book. The adoption of flax, as an auxiliary, by our cotton manufacturers, could not work any injury to the linen trade, since it would only make good the deficiency, if, and as it should arise in the production of cotton fabrics.

ANNUAL BALANCE SHEET

OF THE ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

Dr.

1849.				
Oct. 31.—	To balance on hands, ...	£162	5	0
1850.				
Oct. 31.—	" Subscriptions, ...	451	14	5
..	" Grant from Government, through the Lord Lieutenant, ...	1,000	0	0
..	" Repayments on account of Machinery, ...	37	0	0
		£1,650	19	5

Cr.

1850.							
Oct. 31.—	By Office-Rent, Taxes, Fuel, Attendance, &c., ...				£54	2	10
..	" Printing and Advertising, ...				58	10	2
..	" Postage and Carriage of Parcels,...				22	8	4
..	" Stationery,...				14	4	3
..	" Implements, ...				4	12	6
..	" Sundries, not included in the foregoing items, ...				10	18	1
..	" Secretary's Salary, ...				200	0	0
..	" Agriculturists' Salaries, in full or in part, viz. :—						
	Henry Haslett, ...	£73	10	6			
	Hugh Orr, ...	58	15	0			
	R. F. Patterson,...	55	1	4			
	William Smith, ...	54	2	6			
	W. J. O'Hara, ...	65	19	6			
	W. J. M'Kinney, ...	37	10	0			
	John Stewart, ...	36	14	4			
	Samuel Kennedy, ...	35	5	0			
	Hugh M'Dowell, ...	26	11	0			
	Isaac Irwin, ...	24	10	0			
	Matthew Fisher, ...	11	0	0			
	Hugh Nelson, ...	3	0	0			
	Matthew Harris, ...	3	0	0			
	James M'Aree, ...	31	5	0			
					£516	4	2
	Carry forward, ...				£881	0	4

Brought forward,				£881	0	4
Oct. 31.—By Travelling Expenses, viz.:—						
Secretary,	£30	5	7			
Agriculturists,	374	8	9	404	14	4
.. " Balance in Belfast Bank,	£316	3	9			
.. " " in Secretary's hands,	49	1	2			
				£365	4	11
				£1,650	19	7

JOHN CHARTERS,
JAMES CAMPBELL, } AUDITORS.
JAMES MACADAM, JUN, SECRETARY.

SUPPLEMENT,

SHEWING THE RECEIPTS AND DISBURSEMENTS OF THE SOCIETY, FROM ITS FORMATION, 1ST MARCH, 1841, TO 31ST OCTOBER, 1850.

RECEIPTS.

Subscriptions and Donations,	£7,535	11	3
Government Grants,	3,000	0	0
Accidental Receipts,	22	16	6
Repayments for Machinery,	249	6	2
	£10,807	13	11

DISBURSEMENTS.

Agriculturists' Salaries and Travelling Expenses,	7,084	13	4
Secretary's Salary,	1,275	0	0
Prizes awarded,	482	11	0
Machinery and Implements,	404	2	8
Printing and Advertising,	500	6	7
Office-Rent, Fuel, Taxes,	253	7	4
Postage and Carriage,	139	4	5
Stationery,	67	5	7
Sundries, not included in the foregoing items,	235	19	8
Balance in hands, 31st October,	365	4	11
	£10,807	15	6

JOHN CHARTERS,
JAMES CAMPBELL, } AUDITORS.
JAMES MACADAM, JUN., SECRETARY.

CONTRIBUTIONS TO THE SOCIETY'S FUNDS.

	1841 to 1849.			1850.		
HIS ROYAL HIGHNESS PRINCE ALBERT,	£25	0	0			
Abercorn, the Marquis of,	50	0	0			
Aberdein, Gordon, & Co., Montrose,	10	0	0			
Adair, Alex. Shafto, M.P., London,	30	0	0	£5	0	0
Adair & Gunning, Cookstown,	30	17	0			
Agnew, James, Cairncastle-Lodge, Larne,	25	0	6			
Ainsworth, H., Cleator, Whitehaven,	10	0	0			
Alexander, John, Millford, Carlow,	2	2	0			
Alexander, John, Newtownlimavady,	5	0	0			
Alexander, Nathaniel, M.P., Portglenone,	31	6	0			
Alexander, Henry,	1	1	0			
Algeo, Captain, Armagh,	5	5	0			
Andrews, James, & Sons, Comber,	19	8	0	1	1	0
Andrews, Michael, Ardoyne,	4	4	0	1	1	0
Anderson, H., Ballinacree, Co. Antrim,	1	1	0			
Arbuckle, Lieut.-Col., Donaghadee,	1	1	0			
Annesley, Viscount, Castlewellan,	4	4	0			
Armstrong, W. Jones, Kippure Park, Blessington,	7	7	0			
Atkinson, Henry, Moy,	1	1	0			
Atkinson, W. S., Portadown,	1	1	0			
Aytoun, James, Kirkcaldy,	2	0	0			
Bacon, Edward, Thorock-Hall, Lincoln,	10	10	0			
Baker, Thomas, & Son, London,	1	1	0			
Balfour, Alexander, Kirkcaldy,	1	1	0			
Bandon Branch, County Cork,	10	0	0			
Bankhead, J. B., Dublin,	8	8	0			
Bantry Branch, County Cork,	10	0	0			
Barbour, William, Lisburn,	1	1	0			
Bangor, Viscount,	2	0	0	2	0	0
Barcroft, J. & N., Stramore,	2	0	0			
Barklie, A. & G., Ballymoney,	10	0	0			
Barter, Dr., Blarney, County Cork,	2	0	0			
Barton, Ffolliott W., Clonally, Kish,	2	0	0			
Bates, John, Belfast,	8	0	0	2	2	0
Bateson, Sir Robert, Bart., Belvoir Park,	32	2	0	2	2	0
Bath, Marquis of,	5	0	0			
Batt, Thomas, Purdysburn, Belfast,	5	0	0			
Beattie, John, Portadown,	1	1	0			
Bell, John, & Co., Whitehaven,	1	0	0			

	1841 to 1849.			1850.		
Bell, J. & W. L., & Co., Ballyclare,	£1	1	0			
Bells & Calvert, Whitehouse,	46	17	0	£2	2	0
Bell, Thomas, & Co., Lurgan,	5	5	0			
Bennett, William Ross, Herefordshire,	5	0	0			
Bennett, Thomas, & Co., Aghadoey, Co. Derry,	2	2	0			
Benyon & Co., Leeds,	10	0	0			
Beresford, John Barré, Newtownlimavady,	5	0	0			
Bernard & Koch, Cregagh, County Down,	6	0	0	2	2	0
Berry, Joseph, Moira,	1	1	0			
Besnard, Julius, Cork,	1	1	0			
Bessborough, Earl of,	10	0	0			
Bicknell, George, Manor-House, Kilrea,	4	4	0	1	1	0
Bigger, Lennox, Dundalk,	1	1	0			
Birch, James, Ballybeen, County Derry,	10	0	0			
Birley, J., & Sons, Kirkham, Lancashire,	155	0	0			
Birney, John, Lisburn,	2	2	0	1	1	0
Bishop Sterne's Charities,	3	0	0			
Black, Henderson, Woodford, County Down,	3	0	0			
Black, Henry, Belfast,	1	1	0			
Blackwood, James, Saintfield,	4	4	0	2	2	0
Blakely, Rev. F., Moneyrea,	9	9	0	1	1	0
Bland, Rev. R., Whitehouse,	1	1	0			
Blundell, Francis, Navan,	18	15	0			
Boomer, James, & Co., Belfast,	73	15	0	5	0	0
Borthwick, John, Killroot,	9	9	0	1	1	0
Bouch, Joseph, London,	1	1	0			
Boyd, John, & Co., Belfast,	75	15	8			
Boyd, J. E., Letterkenny,	2	2	0			
Boyle, Gill, & Co, Leeds,	2	0	0			
Booth, Sir R. Gore, Bart., Lisadill, Sligo,				1	1	0
Brady, Captain, Oaklands, Cookstown,	5	0	0			
Brooke, B. G., Moyaver, County Antrim,	1	1	0			
Brooke, Sir A. B., Bart., M.P., Brooksboro',				5	0	0
Brooks, John, Bolton,	10	0	0			
Brown, John, & Sons, Donacloney,	4	4	0	1	1	0
Brown, J. & W., Dundee,	5	0	0			
Brown, Robert, Belfast,	5	0	0			
Browne, R. Clayton, Carlow,	1	1	0			
Brush, C. M., Dromore,	1	1	0			
Bryan, Colonel, Jenkinstown, Kilkenny,	1	1	0			
Buckley, Henry, Hillsborough, Roscrea,	1	1	0			
Buist, A. J., Dundee,	10	6	0			
Burgess, J. Y., Parkanour, Dungannon,	1	1	0			
Butler, Thomas, Kilkenny,	2	2	0			
Byres, James, Mountnorris, Omagh,	1	1	0			
"B.," Birmingham,	1	1	0			

	1841 to 1849.			1850.		
Caledon, Earl of,	£31	10	0	£5	5	0
Camm, Samuel, & Co., Manchester,	2	0	0			
Campbell, Henry, Belfast,	10	0	0			
Carlow Branch,				10	0	0
Carty, Cairnes, Rogers, & Co., Drogheda,	5	0	0			
Cassidy, Robert, Magherafelt,	2	2	0			
Cather, D., Newtownlimavady,	1	1	0			
Caulfeild, Hon. Henry, Hockley, Armagh,	8	8	0	1	1	0
Castlebridge Farming Society, County Wexford,	10	0	0			
Charlemont, Earl of,	40	0	0			
Charley, John, Finaghy, Dunmurry,	20	0	0			
Charley, J. & W., & Co., Seymour-hill,	4	4	0	2	2	0
Clancarty, Earl of,	5	5	0	1	1	0
Clarendon, Earl of,	10	0	0			
Clarke & Innes, Drogheda,	5	0	0			
Clarke, Richard, Bailieborough,	1	1	0			
Clonbrock, Lord,	10	0	0			
Clonakilty Branch, County Cork,	10	0	0			
Coddington, H., Oldbridge, Meath,	1	0	0			
Close, Lt.-Col., Drumbanagher, Newry,	15	0	0			
Clothworkers' Company, London,	30	0	0			
Coates & Young, Belfast,	22	0	0	2	2	0
Cogry Spinning Mills, Doagh,	5	0	0			
Collum, John, Enniskillen,				1	1	0
Cole, Hon. John, Florence-Court,				1	0	0
Cook, William, London,	20	0	0			
Cooper, Edward, Markree Castle, Sligo,				1	1	0
Cootehill Branch,	15	0	0			
Cope, A. W., Drumilly, Loughgall,	5	0	0			
Coulson, James, Lisburn,	1	1	0	1	1	0
Coulson, Brothers, Lisburn,	10	0	0			
Courtown, Earl of,	15	0	0	5	0	0
Cowan, William, & Co., Whiteabbey,	25	0	0			
Craig, A. W., Belfast,	10	0	0			
Cramsie, John, Belfast,	5	5	0			
Crawford, W. Sharman, M.P., Crawfordsburn,	26	6	0	2	2	0
Crawford, John S., Crawfordsburn,	3	3	0	1	1	0
Crawford & Lindsays, Banbridge,	4	4	0			
Cremorne, Lord,	20	0	0			
Crosbie, W. Talbot, Ardfert Abbey, Tralee,	1	0	0			
Curell, J. & D., Belfast,	25	0	0			
Curtis, Patrick, Dublin,	2	2	0			
Dargan, William, Dublin,				10	0	0
Darley, Rev. J., Dungannon,	1	1	0			
Davison, A. & J., Broughshane,				2	2	0
Dawson, Rev. I. M., Tipperary,	4	4	0			

	1841 to 1849.			1850.		
De Ros, Lord, Strangford,				£3	3	0
De Ros, Lady, Do.,				2	0	0
Derry, the Lord Bishop of,	£10	0	0			
De Salis, the Count, Tandragee,	5	0	0			
Despard, Mrs., Queen's County,				1	0	0
De Vere, Sir Vere, Bart., Currah-chase, Adare,	2	0	0			
De Vesci, Viscount,	20	0	0	10	0	0
Devonshire, Duke of,	5	0	0			
Dewhurst, John, & Co., Preston,	2	2	0			
Dobbin, Leonard, Armagh,	1	1	0			
Donegall, Marquis of,	5	0	0			
Douglas, Charles, Gracehill, Lurgan,	5	0	0			
Down, the Lord Bishop of,	3	3	0	3	3	0
Doyne, Charles J. Wells, County Wicklow,				1	1	0
Downshire, late Marquis of,	55	0	0			
Downshire, present Marquis,	270	0	0	25	0	0
Drogheda Branch,	25	0	0			
Dromore, the Dean of, Waringstown,	24	4	0			
Druitt, Thomas, Donacloney,	1	1	0			
Duff, Admiral, Elgin,	2	2	0			
Duffin, Charles, & Co., Belfast,	4	4	0			
Dufferin, Dowager Lady, Clifton,	15	0	0			
Dufferin & Claneboye,	5	0	0			
Dunbar, M'Master, & Co., Gilford,	152	18	0	10	0	0
Dungannon, Viscount,				5	0	0
Dunmanway Branch, County Cork,				10	0	0
Durham, Andrew, Belvidere, County Antrim,	2	2	0			
East Mill Company, Brechin,	2	0	0			
Edward, A. & D., & Co., Dundee,	5	0	0			
Enniskillen, Earl of,				4	0	0
Erne, Earl of,	35	0	0	5	0	0
Evans, T. K., Armagh,	1	0	0			
Ewart, William, & Sons, Belfast,	20	0	0	5	0	0
Falls Mill Company, Belfast,	140	0	0	5	0	0
Farmer, Sir G. R., Bart., Bideford,	1	1	0			
Ferguson, Sir R. A., Bart., M.P.,	10	0	0			
Ferguson, J. S., & Co., Belfast,	25	0	0			
Ferguson, John F., Belfast,	5	5	0			
Ferguson, T., & Sons, Whiterock,	1	1	0	1	1	0
Fethard Branch,				10	0	0
Filgate, Fitzherbert, Hillsboro',	1	1	0	1	1	0
Filgate, William, Lisrenny, Ardee,	1	1	0			
Fisher, John, & Co., Belfast,	14	7	0			
Fishmongers' Company, London,	30	15	0	5	0	0
Fitzpatrick, Rt. Hon. J. W., M.P., Lisdaff,				10	0	0
Fitzpatrick, R. W., Granston-Manor,				10	0	0

	1841 to 1849.			1850.		
Fletcher, A., & Co., Glasgow,	£68	15	0			
Foott, H. B., Carrigacunna Castle, Cork,				£1	1	0
Forsythe & Orr, Belfast,	49	12	0	2	2	0
Fortescue, Thomas, Ravensdale,	10	0	0	5	0	0
Foster, R. Springfield, Dungannon,	2	2	0			
Gaily, Daniel, Coleraine,	1	1	0			
Galmoy Farming Society, County Kilkenny,	10	0	0			
Gamble, T. & W., Carrickfergus,	10	0	0			
Gartlan, T. M'Evoy, Carrickmacross,	2	2	0			
Gascoyne, Misses, Kilfinane, County Limerick,	10	0	0	2	2	0
German, Petty, & Co., Preston,	130	0	0			
Gervais, Rev. Francis, Cecil, Augher,	10	0	0			
Gibson, James, Belfast,				1	1	0
Gihon, W., & Son, Ballymena,	4	4	0	1	1	0
Given, A., Newtownlimavady,	24	0	0			
Glasgow & Wood, Cookstown,	1	1	0			
Glendinning, Henry, Portadown,	1	1	0			
Gladstone, Thomas, London,	5	0	0			
Goddard, James, Belfast,	5	0	0			
Gosford, Earl of,	20	0	0			
Gore, Col. A. K., Beleek-Manor, Ballina,	1	1	0	1	1	0
Græme, Major, Crieff, Perthshire,				1	0	0
Gradwell, Chadwick, & Co., Drogheda,	37	10	0	20	0	0
Gray, William, & Sons, Whitehouse,	10	0	0			
Grandison, Thomas, Orisaba, Mexico,				1	0	0
Greg, Thomas, Ballymenoch,				1	0	0
Green, James, & Co., Keady,	19	8	4			
Greer, George, Lurgan,	10	10	0	1	1	0
Greville, Algernon,	1	1	0			
Grimshaw, Edmund, Mossley,	60	0	0	5	0	0
Grimshaw, James, & Sons, Whitehouse,	76	10	0	5	0	0
Gunning & Quarrell, London,	2	0	0			
Gunning & Campbell, Belfast,				1	1	0
Hall, Roger, Narrowwater-Castle, Newry,	22	2	0	2	2	0
Hancock, John, Lurgan,	8	8	0	1	1	0
Hancock, Professor, Belfast,				1	1	0
Harden, James, Harrybrook, County Armagh,	1	1	0			
Harrison, John, Mertoun, Belfast,	1	1	0			
Hawkshaw, Lt.-Col., Blaris-Lodge, Lisburn,	2	2	0			
Harris, J. P., Ashfort, Tynan,	1	1	0			
Hay, Brothers, & Co., Ballina,				1	1	0
Hayes, F. W., Seapatrick, Banbridge,	2	10	0			
Hayes, Richard, Millmount, Banbridge,	2	2	0			
Hemphill, Hunter, & Co., Greenfield, Coleraine,	10	10	0	2	2	0
Hendry, J. & W., Kirkcaldy,	1	0	0			
Henning, John, Waringstown,	11	6	0	2	2	0

	1841 to 1849.	1850.
Henry, George, Tassagh, Keady, ...	£2 0 0	
Heron, Hugh, Banbridge, ...	1 0 0	
Herdmans & Co., Strabane, ...	5 0 0	
Herdman, J. & J., & Co., Belfast, ...	90 0 0	£5 0 0
Hertford, late Marquis of, ...	100 0 0	
Hertford, present Marquis of, ...	125 0 0	25 0 0
Heuzé, M., Landerneau, France, ...	1 0 0	
Hewett, Hon. and Rev., J. P., ...	1 0 0	
Heyn, Gustavus, Belfast, ...	3 3 0	
Higginson, Henry, Leeds, ...	2 2 0	
Hill, Lord George A., Gweedore, ...	5 0 0	
Hill, Lord A. Edwin, M.P., ...		5 0 0
Hillsborough, Earl of, ...	5 0 0	
Hincksman, Furness, & Co., Preston, ...	70 0 0	
Hives & Atkinson, Leeds, ...	30 0 0	20 0 0
Hodges, Professor, Belfast, ...	1 1 0	1 0 0
Houston, R. B. Blackiston, Orangefield, ...	14 4 0	2 2 0
Hudson, William, Mount-Caulfield, Newry, ...	1 0 0	2 2 0
Hull, Wilson, & Co., Belfast, ...	37 19 0	2 2 0
Hunter & M'Kissack, Belfast, ...	2 2 0	
Hunter & Moat, Dunmurry, ...	2 2 0	2 2 0
Hutchinson, John, Tandragee, ...	1 1 0	
Idrone Farming Society, County Carlow, ...	10 0 0	
Inistioge Farming Society, County Kilkenny, ...		10 0 0
Irish Society, the Hon., London, ...	30 0 0	10 0 0
Irwin, Crommelin, Newgrove, Belfast, ...	1 1 0	
Irwin, J. R., Carnagh, Keady, ...	1 1 0	
Jackson, F., Inane, Roscrea, ...	1 1 0	
Jackson, Thomas, Workington, ...	1 0 0	
Jackson, Thomas, Belfast, ...		1 1 0
Jaffe, Brothers, Hamburgh, ...	1 1 0	
Jamieson, Henry, Clonmel, ...		1 0 0
Johnston, Joseph, Knappagh, Armagh, ...	1 0 0	
Johnston, John, Moy, ...	1 1 0	
Jones, John, Templeranney, Arklow, ...	1 1 0	
Jones, Lewis G., Wood-Hill, Dromore West, ...	1 1 0	
Jones, Miss, Kilwaughter-Castle, Larne, ...	2 2 0	
Jones, Major, Drumard, County Leitrim, ...	1 1 0	
Kavenagh, Lady Harriet, Kilkenny, ...	1 0 0	
Kavanagh, J. B., Newtownlimavady, ...	1 1 0	
Kay, James, & Son, Manchester, ...	57 10 0	
Kennedy, James, & Sons, Belfast, ...	34 4 0	2 2 0
Ker, David S., M.P., Montalto, ...	5 0 0	5 0 0
Kilkenny Branch, ...		10 0 0
King, Henry, Dungiven, ...	3 3 0	
Kingston, A. C., Longford, ...	1 1 0	

	1841 to 1849.			1850.		
Kinmond, Peter, Dundee,	£1	0	0			
Kinmond & Hill, Dundee,	1	0	0			
Kirk, William, Annvale, Keady,	5	0	0			
Kirkpatrick, Dr., Dublin,	1	1	0	£1	1	0
Kirwan, Denis, Castlehacket, Tuam,	1	1	0	1	1	0
Knox, J. & W., Kilbirnie, Ayr,	1	0	0			
Lancey, Capt., Newtownlimavady,	1	1	0			
Landall, D., & Co., Kirkcaldy,	1	1	0			
Lansdowne, Marquis of,				10	0	0
Larne Farming Society,	10	0	0			
Lascelles, Rev. R. P.,	1	1	0			
Law, Samuel, Banbridge,	27	10	0	1	1	0
Leadbetter, John, & Co., Belfast,				2	2	0
Leadbetter, Adamson, & Co., Blairgowrie,	2	0	0			
Leathem, J. & W., Derry,	10	0	0			
Lee & M'Kinstry, Armagh,	1	1	0			
Ledlie, George,	1	1	0			
Leinster, Duke of,	35	0	0			
Leslie, Edmund, Donaghadee,	3	3	0			
Leslie, Mrs. W., Donaghadee,	1	1	0			
Leslie, Charles Powell, M.P., Glasslough,	45	0	0			
Leslie, Rev. E., Anahilt,	3	3	0			
Lewis, A. G., Monaghan,	1	1	0			
Lindsay, David, Ashfield, Dromore,	3	3	0			
Littledale, A. H., Bolton-Hall, Lancashire,	1	1	0			
Lloyd, R.,	1	1	0			
Londonderry Farming Society,	25	0	0			
Londonderry, Marquis of,	25	0	0			
Louth Farming Society,				15	0	0
Lowry, Joseph, Belfast,	2	2	0			
Lowson, Andrew, Arbroath,	4	0	0			
Lucan, Earl of, Castlebar,	10	0	0			
Lucas, Edward, Dublin,				1	1	0
Lurgan, the late Lord,	145	5	0			
Macartney, George, Lissanoure-Castle,	25	0	0			
Macaulay, Patrick, Randalstown,	25	9	0			
Magill, S. R., Cookstown,	1	1	0			
Malcolm, James, Lurgan,	4	4	0	1	1	0
Malcolm, A. G., Kirkcaldy,	1	1	0			
Mann, Alexander, & Son, Arbroath,	4	0	0			
Marley, Gabriel, London,	1	0	0			
Martin, John, Jun., Killileagh,	31	0	0			
Marshall & Co., Leeds,	205	10	0	10	0	0
Mathew, John, Rathcloheen, Cashel,	2	2	0			
Matthew, Very Rev. Theobald, Cork,	2	2	0			
Maxwell, J. W., Finnebrogue, County Down,	10	0	0			

	1841 to 1849.			1850.		
Meade, Hon. General, London,	£25	0	0	£5	0	0
Mercers' Company, London,	80	0	0	5	0	0
Middleton Union Farming Society, County Cork,	15	0	0			
Metcalfe, J. & W., Pateley-Bridge, Ripon,	2	2	0			
Millar, Alexander, Ballycastle,	2	2	0			
Millar, Rowley, Moneymore,	1	1	0			
Milne, Cruden, & Co., Aberdeen,	25	0	0			
Molony, James, Kiltanon, Clare,	2	2	0			
Moore, W. J., Ligoneil, Belfast,	5	0	0			
Monaghan Branch,	15	0	0			
Monkstown Spinning Company, Whitehouse,	31	14	0	2	2	0
Monsell, Wm., M.P., Tervoe, Limerick,	2	0	0			
Monteagle, Lord,	15	0	0			
Montgomery, James, & Son, Belfast,	24	0	0	2	2	0
Moore, James, Moorefort, County Antrim,	3	0	0			
Moore, J. S., Ballydivity, County Antrim,	5	0	0			
Moore, Samson, Ballynacree, County Antrim,	5	0	0			
Moore, Henry, Barne, County Carlow,				1	0	0
Morfit, John, Leeds,	14	14	0	3	3	0
Mortimer, R., Carrick-on-Shannon,	3	3	0			
Mulhollands, Belfast,	100	0	0			
Mulholland, A., & Son, Belfast,	146	13	0	10	0	0
Mulholland, S. K., & Hinds, Belfast,	139	6	0	10	0	0
Mulholland, William, Belfast,	2	10	0			
Munn, John, Jun., Londonderry,	20	0	0			
Murdoch, William, Monaghan,	1	1	0			
Murland, James, Castlewellan,	95	0	0			
Murphy, John, & Co., Linfield, Belfast,	17	10	0			
Macoun, John, Kilmore,	1	0	0			
M'Adam, Curell, & Co., Belfast,	9	4	0	2	2	0
M'Cartan, John, Waringstown,	3	3	0	1	1	0
M'Causland, Marcus, Newtownlemavady,	5	0	0			
M'Clelland, James, Banville,	1	1	0			
M'Clure, Alexander,	1	1	0			
M'Donald, A., & Co., Kirkcaldy,	1	0	0			
M'Donnell, Edmund, Glenarm-Castle,	6	6	0	2	2	0
M'Garrel, Charles, Magheramorne,	2	2	0			
M'Gaw, William,	1	0	0			
M'Gildowney, John, Ballycastle,	1	1	0			
M'Kee, John, Keady,	1	1	0			
M'Kenzie, Alexander,	1	1	0			
M'Kibbin, Robert, M.D., Ballymacarrett,	29	0	0	2	2	0
M'Murray, George, & Co., Waringstown,	2	10	0			
M'Murray, Thomas, & Co., Dromore,	12	12	0	2	2	0
M'Naghten, Sir F. W., Bart., Bushmills,	10	0	0			
M'Naghten, Sir E. C. W., Bart., Bushmills,	1	1	0			

	1841 to 1849.			1850.		
M'Naghten, Bartholomew, Ballyboggy, Coleraine,	£3	3	0	£1	1	0
M'Neece, Rev. T.,	1	1	0			
M'Neile, John, Parkmount, Belfast,	9	9	0	1	1	0
M'Watty, James, Castleblayney,	1	1	0			
Nesbitt, John, London,	5	0	0			
Newry & Morne, Viscount, M.P., Rostrevor,	21	1	0	1	1	0
Newton, Philip J., Dunleckney, Carlow,	3	0	0			
Nicholson, George, Donaclony,	1	0	0			
Nicholson, John, New York,	1	1	0	1	1	0
Nicholson, William, Donacloney,	1	1	0			
Nicholson, Robert, Donacloney	1	1	0			
Niven, Richard, Lambeg,	7	7	0	1	1	0
Norris, John, Camowen, Omagh,				1	1	0
Nugent, Colonel, Portaferry,	15	0	0			
O'Brien, W. Smith, M.P., Cahirmoyle,	1	1	0			
Ogilby, Sir John, Bart., Baldovan, Perthshire,	1	1	0			
Oliver, William, Spring-Lodge, Kilfinane,	1	1	0			
Orr, Andrew,	1	1	0			
Orr, W., & Sons, Armagh,	1	1	0			
Palmerston, Viscount,				1	1	0
Parker, Preston, & Co., Belfast,	5	0	0			
Paton, J. & G., Montrose,	10	5	0			
Patrick, John, & Sons, Ballymena,	3	3	0	1	1	0
Patton, William, Armagh,	1	1	0			
Peel, Right Hon. Sir R., Bart.,	25	0	0			
Phibbs, William, Seafield, Sligo,				1	1	0
Pike, Jonathan, Coalisland,	1	1	0			
Pirrie, William, Belfast,	1	1	0			
Porter, H. J., Tandragee,	1	0	0			
Porter, Rev. J. G., Lisbellaw, Enniskillen,	1	0	0			
Porter, John G., Kilskeery, Trillick,	1	0	0			
Powerscourt, Viscount, Representatives of,	20	0	0			
Prentice, H. L., Caledon,	5	5	0	1	1	0
Price, James, Saintfield,	6	6	0	2	2	0
Price, Nicholas, Saintfield,	15	0	0			
Price, Sir Charles, & Co., London,	10	0	0			
Primate, the Lord, Armagh,	20	0	0			
Provincial Bank of Ireland,	20	0	0			
Quarell, Francis, London,	1	0	0			
Quinn, Peter, Dromore-House,	1	1	0			
Quinn, James, Dromore-House,	1	1	0			
Ram, Stephen, Ramsfort, Wexford,	1	0	0			
Ranfurley, Earl of,	35	0	0	5	0	0
Renny, Sons, & Co., Arbroath,	4	7	0			
Renshaw, W., & Co., Manchester,	6	6	0	2	2	0
Reilly, J. T., Scarva, Loughbrickland,	7	2	0	1	1	0

	1841 to 1849.			1850.		
Richards & Co., Aberdeen,	£26	0	0			
Richardson, Brothers, & Co., Belfast,	69	4	0	£2	2	0
Richardson, J. N., Sons, & Owden, Belfast,	92	10	0	5	0	0
Richardson & Co., Lambeg,	53	15	0	5	0	0
Richardson, Samuel, & Co., Lisburn,	30	0	0			
Richardson, Jonathan J., Lisburn,	4	4	0	2	2	0
Richardson, Miss, Rich-hill,	10	10	0	2	2	0
Richardson, J. & T., & Co., Springfield,	6	6	0	1	1	0
Richardson, H., Somerset, Coleraine,	6	6	0			
Roberts, John, Collin, Lisburn,	3	3	0	1	1	0
Roche, E. Burke, M.P., County Cork,				5	0	0
Rollo, R., Moyfort, Ballina,				1	0	0
Roddy, Robert, Belfast,	3	3	0	1	1	0
Roden, Earl of,	10	0	0			
Roscrea Branch,				10	0	0
Ross, D. R., M.P., Rostrevor,	10	0	0			
Rossmore, Lord,	5	0	0			
Rowan, Major, Merville, Carrickfergus,	7	7	0	1		0
Russell, James, Dunlewey, County Donegall,	2	2	0			
Russell, Matthew, Newry,	1	1	0			
Rutherford & Co., Dunfermline,	2	2	0			
Savage, John, Belfast,				1	1	0
Sadler, Fenton, & Co., Belfast,	4	4	0	2	2	0
Sadler, Samuel, & Co., London,	1	0	0			
St. Leger, Hon. A. B., Adare, Limerick,	2	2	0			
Salters' Company, London,	10	10	0			
Saunders, R. F., Baltinglass,	1	1	0			
Saunders, Miss, Fortgranite, Baltinglass,	1	1	0			
Scott, Major, Willsb'ro', Derry,	1	1	0			
Seaver, Captain, Heath-Hall, Newry,	10	0	0			
Shaw & Houghton, Celebridge,	62	10	0			
Shaw, Joseph, Templemills,	42	10	0			
Shaw & Beale, Bath,	1	0	0			
Shaw, Edward, & Co., Belfast,	20	0	0	2	2	0
Shuldham, Lieutenant-General, Dunmanway,	2	2	0			
Simms, William, Belfast,	3	3	0	1	1	0
Simpson, John,	1	0	0			
Skibbereen Branch, County Cork,	15	0	0			
Skinner, C. G. M'G., Dundrum,	1	1	0	1	1	0
Sligo, Marquis of,	10	0	0			
Sligo Branch,	10	0	0			
Smyth, John, & Co., Banbridge,	29	4	0			
Spencer, Lawrence, & Co., Preston,	2	2	0			
Staples, Sir Thomas, Bart., Lissan, Co. Tyrone,	5	0	0			
Staples, Edmund, Queen's County,				1	1	0
Stevenson, J. & W., Roan Mills, Dungannon,	6	5	0			

	1841 to 1849.			1850.		
Stewart & M'Clelland, Ligoneil,	£99	19	2			
Stewart & Savage, Lisburn,	22	10	0			
Storar, T., & Co., London,	15	9	0	£2	2	0
Stoney, Isaac, Gilford,	1	0	0			
Story, A., Carrick, County Fermanagh,	1	1	0			
Stronge, Sir J. M., Bart., Tynan-Abbey, Armagh,	14	14	0	2	2	0
Stuart de Decies, Lord,	5	0	0			
Sullivan, John, Kinsale,	1	1	0			
Swan, P. D., Kirkcaldy,	5	0	0			
Symes, William, Ballina,				1	1	0
Taylor, Hon. and Rev. E., Ardgillan,	5	0	0			
Templetown, Viscount,	70	0	0			
Tennent, Robert James, M.P., Belfast,	4	4	0	1	1	0
Tennent, J. Thomson, Belfast,	7	7	0			
Tenison, E. K., M.P., Kilronan-Castle,	1	1	0			
Tenison, Lady Louisa, Kilronan-Castle,	1	1	0			
Thompson, Robert, & Co., Wolf-Hill,	98	15	0			
Thomson, John, Lowwood, Belfast,	1	1	0			
Tirkeeran Farming Society, County Derry,	25	0	0			
Trail, William, Ballylough, Bushmills,	4	4	0			
Trinity College, Dublin,	10	0	0			
Tullamore Branch, County Westmeath,				10	0	0
Verner, Sir W., Bart., M.P., Churchhill, Moy,	40	0	0	5	0	0
Vesey, Samuel, Derrabard, Fintona,	2	2	0			
Waithman & Co., Yealand, Lancashire,	5	0	0			
Walker, Mark, Leeds,	4	0	0			
Walker, William, Carrickfergus,	15	0	0			
Walker, R. & S., Tullygirvan,	8	7	0	1	1	0
Waller, Rev. Dr., Pallaskenry, Limerick,	2	0	0			
Warren, Rev. J. C. B., Horkesley-Hall, Essex,	1	0	0			
Waring, Richard, Newry,	1	1	0			
Wandesforde, J. B., Castlecomer,	1	1	0			
Waterford, Marquis of,	50	0	0	5	0	0
Waterford Branch,				10	0	0
Watson, James, Brookhill,	14	14	0	2	2	0
Watson, R., & Sons, Lurgan,	3	3	0	1	1	0
Waugh, Henry, Banbridge,	1	1	0			
Wexford Union Agricultural Society,				10	0	0
White, William, Newton-Lodge, Sligo,	1	1	0			
Wiggins, Henry, Muff, County Derry,	6	0	0			
Wilks, John, London,	2	0	0			
Wilkinson & Co., Leeds,	40	1	0			
Willis, Henry H., & Co., London,	1	1	0			
Wilson, John, & Sons, Whitehaven,	1	0	0			
Wilson, D. J., Belvoir, County Clare,	1	1	0			
Wittkowsky, Querfeldt, & Co., Riga,	5	0	0			

	1841 to 1849.			1850.		
Wynne, John, Hazlewood, Sligo, ...	£1	1	0	£1	1	0
Woods, Charles, Moy, ...	1	1	0			
Wolsey, John, Portadown, ...	1	1	0			
Watts, Samuel, Lurgan, ...	1	1	0			
Young, John, & Co., Ballymena, ...	2	2	0	1	1	0

FINLAY, PRINTER, BELFAST.

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THE ELEVENTH

ANNUAL REPORT AND TRANSACTIONS

OF THE

ROYAL SOCIETY

FOR THE

PROMOTION AND IMPROVEMENT

OF THE

GROWTH OF FLAX IN IRELAND;

WITH AN APPENDIX,

TREASURER'S STATEMENT OF ACCOUNTS,

AND

LIST OF SUBSCRIPTIONS AND DONATIONS,

FOR THE YEAR ENDING 31st OCT., 1851.

PARSONS LIBRARY
University of Michigan

BELFAST:
PRINTED AT "THE MERCURY" OFFICE,
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Filgate, Fitzherbert, J.P.
Greer, George, J.P.
Grimshaw, James, Jun.
Hancock, John, J.P.
Herdman, John.
Hodges, Professor.
Mulholland, Andrew, J.P.
Mulholland, S. K., J.P.
M'Kibbin, Robert, M.D.
M'Master, John.
Niven, Richard.
Preston, John.
Reilly, J. T., D.L., J.P.
Richardson, Jonathan J.
Skinner, Captain, J.P.
Valentine, William.
Walker, Richard.

Treasurers,.................	THE BELFAST BANKING COMPANY.
Auditors,.....................	JOHN CHARTERS, JAMES CAMPBELL.
Secretary, ...	JAMES MACADAM, Jun.

Office, -*Commercial Buildings, Belfast.*

RULES OF THE SOCIETY.

I.—That all persons paying a subscription of *one guinea*, annually, be constituted ordinary members.

II.—That the Society, besides its ordinary members, do consist of a President, Vice-Presidents, a General Committee of Management, a Treasurer, and a Secretary.

III.—That the Treasurer and Committee of Management be annually elected, by general meeting of the Society, from among its members.

IV.—That the Society do meet in the month of November, of each year, to elect officers, hear reports, make or alter rules, and transact such other business as may come before it.

V.—That the General Committee do meet on the last Wednesday in each month, for the transaction of the ordinary business of the Society, three members required to constitute a quorum; the Secretary to call special meetings, at the request of three members of the Committee, who may judge it expedient to do so.

VI.—That, as the utility of this Society will be much promoted by a number of persons taking an interest in it, it will be accessible to all, on the payment of one guinea, annual subscription; but, as the funds so procured would be, most probably, inadequate to its management, donations shall be solicited from persons who can afford such sums as will enable the contemplated objects of the Society to be effectually carried out; and it is confidently expected, that, for an object of such national importance, such contributions will be given, as will put its success beyond a doubt, as far as the means of working it are concerned; and that the zeal and discretion of its managers will secure that benefit for the undertaking which its importance demands.

VII.—That every one who becomes a member shall continue to be considered as such, and his subscriptions justly due to the funds of the Society, until he gives notice, in writing, to the Secretary, of his intention to withdraw.

VIII.—That no member, in arrear two years or more, shall be permitted to take part in any debate of the Society, or give a vote upon any question, until such arrear be paid up.

IX.—The Treasurer shall receive all moneys belonging to the Society, and lodge same in the Bank which may be appointed to keep the accounts, when it may accumulate to the sum of £50 in his hands. He shall also draw cheques, and pay such sums as may be voted by the General Committee, at its meetings, but not without its authority; and said cheques shall be signed by the Chairman of the meeting, the Treasurer adding also his own signature. He shall also furnish a yearly statement of accounts, and report monthly receipts and expenditure, at the General Committee meetings, shewing a list of members whose subscriptions remain unpaid, at least once a-year.

X.—The Secretary shall conduct the correspondence of the Society, keep the books of it and of the Committee, take charge of all matters connected with their proceedings, give notice of meetings to those entitled to them, and attend to any duties the Committee may direct.

XI.—All new rules, or alterations of the present regulations, to be made at the annual meeting of the Society; notice of such rule or alteration to be proposed having been given to the Committee, at least a fortnight previous to the general meeting.

XII.—That this Society shall encourage Branches, in different districts, for the purpose of forwarding its objects,—to correspond, and otherwise co-operate with the General Committee; the President of each of the Local Branches to be an *ex-officio* member of the General Committee, and to be entitled to the regular notices of meetings,—each Branch to consist of subscribers to the Society only.

XIII.—That, in order to afford every facility to Local Farming Societies and Branches, in the South and West of Ireland, for obtaining the services of the Flax Society's Agriculturists, the following be the regulations in future :—

First.—Every Branch or Local Farming Society, as aforesaid, which shall incorporate itself with the Flax Society, by contributing to it not less than *Ten Pounds*, annually, shall be entitled, while it so contributes, to the service of a Flax Agriculturist, for two weeks in the sowing, and three in the pulling, seasons; the salary of the Agriculturist, and his travelling expenses to the district, to be defrayed by the Flax Society, but his expenses, while occupied within the bounds of the district, to be defrayed by the Local Society or the individuals employing him.

Second.—The Flax Society will send to the Local Society, so qualifying, one of the Agriculturists, during the Winter, if required, to select and prepare land for the flax crop.

Third.—A sufficient supply of the Society's publications will be furnished free of charge.

Fourth.—An additional week of the Agriculturist's services will be given, for every additional *two pounds* subscribed by the Local Society.

XIV.—That, in case of any individual landed proprietor being desirous of introducing flax culture, in a district where there is no Local Society, or where it has not qualified, a subscription of not less than *one guinea* to this Society will entitle each individual to a certain time of the Agriculturist's services, to be regulated by the Committee of the Flax Society; and that, in all such cases, the expenses of the aforesaid Agriculturist, to and from the district, and while engaged on the estate, shall be defrayed by the landed proprietor so requiring him.

ROYAL SOCIETY
FOR
THE PROMOTION AND IMPROVEMENT
OF THE
GROWTH OF FLAX IN IRELAND.

(FROM "THE BELFAST MERCURY," OF THE 29TH NOV., 1851.)

THE eleventh annual meeting of this Society was held in the Society's Rooms, Commercial Buildings, on Friday, the 28th November. Among those present were:—Marquis of Downshire, Earl of Erne, Viscount Massereene, Lord Rossmore, the Lord Bishop of Down, Sir Robert Bateson, Bart., Belvoir-park, Sir J. M. Stronge, Bart., Tynan Abbey; R. J. Tennent, Esq., M.P.; A. Shafto Adair, Esq., M.P.; W. Sharman Crawford, Esq., M.P.; M. J. Anketell, D.L., Anketell Grove; John M'Neile, D.L., Parkmount; Roger Hall, D.L., Narrowwater Castle; J. Temple Reilly, D.L., Scarvagh House; Robert Gordon, D.L., Florida Manor; G. R. Dawson, D.L., Castledawson; C. R. Dobbs, D.L., Castle Dobbs; Captain R. Peel Dawson, D.L., Castledawson; James Agnew, J.P., Cairncastle Lodge; S. K. Mulholland, J.P., Eglantine House; Captain Kennedy, J.P., Cultra; Thomas Greg, J.P., Ballymenoch; C. M'G. Skinner, J.P., Ballyalton; W. R. Anketell, J.P., Ballynahinch; J. B. Bankhead, J.P., Glenarm; Wm. Coates, J.P.; Major Humphreys, J.P., Strabane; Alexander Davison, J.P., Knockboy; Edmund Grimshaw, J.P., Mossley; John Sharman Crawford, J.P., Crawfordsburn; R. B. B. Houston, J.P., Orangefield; T. M. Birney, J.P., Carrickfergus; Wm. M'Cance, J.P., Suffolk; Thos. Bateson, J.P., Templepatrick; Guy Stone, J.P., Barnhill, Esqrs.; the Very Rev. the Dean of Ross; Rev. R. Loftus Tottenham, Donamoine Rectory, Carrickmacross; Rev. W. R. Townsend, Aghadda Rectory, County Cork; Rev. F. Blakely, Moneyrea; Rev. Spencer Knox, Derry; Professor Hodges, Professor Ferguson, John Reid, Glasgow; Robert Allman, Bandon; Hill Hamilton, John M'Master, Gilford; John Roberts, Collin; W. G. Andrews, Comber; Jonathan J. Richardson, Lisburn; John Borthwick, Killroot; Thomas Walkington, Ballinderry; R. M'Kibbin, M.D.; R. Holmes, American Consul; J. Charters, Robert Blackwell, Prairie; Wm. Sharman Crawford, jun., Alex. Hunter, Dunmurry; Michael Andrews, Ardoyne; Richard Niven, Chrome-hill; B. G. Brooke, Moyaver; James Campbell, Robert M'Adam, Charles Duffin, Richard Walker, Tullygirvan; John Herdman, Thomas H. Higgin, John Hamill, Trench House; J. Clibborn Hill, Banbridge; James M'Clelland, Banville; James Herdman, John

Finlay, Esqrs.; Rev. Mr. Hall, Warrenpoint; Rev. Mr. Dunlop, James Thompson, Ballymoney; E. Walkington, A. Bernard, Cregagh; John Windram, Glasslough; James Heron, William Steen, Richard Davison, John Hind, jun., H. Sharman Crawford, Victor Kennedy, William Glenny, Newry; Alex. Dickson, Samuel Vance, John Preston, James Simms, Wm. Ferguson, Whiterock; Richard Robinson, Thomas M'Cammon, David Connor, James F. M'Caw, John Rowan, John Hunter, jun., Wm. Simms, Thomas Jackson, Thomas Chermside, John Coates, Carrickfergus; Samuel Walker, Tullygirvan; Isaac Andrews, Comber; John Holden, John Birney, Lisburn; D. Ferguson, R. Roddy, F. Lewis, Esqrs., &c., &c.

Some specimens of flax-straw, steeped flax, and flaxseed, were arranged on tables, for the inspection of the meeting. The straw was shewn as an average sample of the crop of this year in the Counties of Antrim, Down, Monaghan, Longford, Louth, King's County, Kilkenny, Cork, Kerry, Clare, Limerick, Tipperary, Waterford, Galway, and Sligo. Several of the lots from those districts in which flax culture has been lately introduced were of excellent quality, and equal to Ulster flax. Among the scutched samples of steeped flax fibre were some of those which had been shewn in the Great Exhibition by the Society—some from Messrs. Walker, Tullygirvan Mills; one of fine quality, from Mr. Hemphill, of Wheatfield, County Derry; and one remarkably good, from the Earl of Bandon, County Cork, which was produced on soil which had given crops of flax during the two previous years.* The flax shewn in illustration of Schenck's process of hot-water steeping was from various retteries, among which we noticed the names of Patrington, in Yorkshire (Messrs. Marshall); Cregagh, County Down; Latimerstown, County Wexford; Donamoine, near Carrickmacross, Glasslough, and Limerick.

Home-saved seed was shewn from most of the counties in Ireland, and appeared equal to any foreign. Some small specimens of flax fibre were exhibited to illustrate the new process of Mr. Bower, of Leeds, which is being carried out at Rawcliffe, near Selby. One of them was of remarkably fine reed, soft, silky, and yet strong. On the whole, the samples exhibited at the meeting were highly satisfactory, as illustrative of the character of this year's flax crop; while those from the districts of the South and West of Ireland which have recently commenced the culture of flax, afforded evidence of their capability of producing a good quality of straw.

Shortly after twelve o'clock, the chair was taken by the Most Noble the Marquis of DOWNSHIRE.

His LORDSHIP said—Gentlemen, I beg to express to this large and respectable meeting the pleasure I feel in taking the chair on the present occasion—the anniversary of the well-being (as I may properly call it) of this Society, which has been the means of doing so great an amount of good in Ireland. (Hear, hear.) To so great an extent has its valuable instrumentality been appreciated—I am glad to understand from the report which will be submitted to you—that the attention of English and Scotch manufacturers is being called to this country, with a view of purchasing flax largely here—a circumstance which will be not less a matter of advantage to the grower of flax than it will be to these gentlemen themselves. I may take this occasion of reminding you, that, in 1846-7, some subscriptions—private subscriptions—were entered into, by a few gentlemen of this part of the country; the sum of £2,000 was made up; and, by the means of this, the Society was enabled to extend to other parts of Ireland those exertions which had proved so beneficial to Ulster; for, you will recollect that, up to that time, the operations of the Society were extended only to this part of the country. By means of the steps which followed these subscriptions, societies were formed in several parts of Ireland; and by the payment of very small sums, these are connected with this Society, and are entitled to participation in all the advantages of it. You will be glad to learn, that there are no fewer than twenty-three counties in connexion with our Society this year. (Hear.) To shew you the relative quantities of flax grown in former years and at present, I may just say, that, in 1848, there were sown 53,863 acres; in 1850, there was a considerable increase, there being, in that year, 91,040 acres. This year, there is a great and evident increase; for we have, for 1851, so large a number of acres as 138,619. (Hear, hear.) This, you will say, is indeed an enormous quantity; but it falls far short of the supply which is required for the United Kingdom. (Hear.) That supply has been estimated at 500,000 acres; and if you subtract the quantity sown in the year 1851 from the actual quantity required, you will find there is a deficit to be made up of 361,381 acres. (Hear, hear.) Thus, you will see, there is an enormous gap yet to be supplied; and we can only expect to see it realised in the course of two or three years; as it would be unreasonable to suppose that so large an additional quantity would be brought into cultivation in the course of one year or so. However, the matter will lie very much with landlords and others, who have land at their disposal, to fill up that hiatus; for, hitherto, we have been inundated with foreign produce to that amount. (Hear, hear.) If you will allow me, I would also take the present opportunity of making a few remarks on another subject of great importance—I mean that of scutch-mills. (Hear, hear.) I may say there are none of these in the country, considering the limited supply, and the great want there is of them. When the farmer finds there are so few of these, where he can send his flax, he becomes discouraged; and, but for this circumstance, there is no doubt we would have a much greater breadth of land laid under flax. Have more scutch-mills, and you will give greater confidence to farmers to grow a crop of flax. If you sow wheat or corn, you are aware that you will have no difficulty in getting a ready market for it; but half of the farmers sow flax, and they do not know where they will get a market for it. But, I think it would be well if gentlemen of capital were to turn their attention to the question of scutch-mills; for, from what we now know of the quantity of flax which has been sown this year, and for which there was no adequate accommodation in the way I have referred to, and the increased quantity which will be sown next year, there need be no doubt as to there being plenty of work for a large number of scutch-mills. (Hear, hear.) I would next refer to a matter which is of some importance. I, however, speak only from hearsay, not from personal knowledge; but I think it right to mention it here. It appears that there were several persons who, in the early part of the season, made very liberal offers to the farmers of purchasing flax, if the latter sowed it. So much as £12 an acre was offered, before the seed was put in the ground. I believe that it has turned out, unfortunately, in the South and West, that the farmers who sowed large quantities of flax on the faith that it would be so purchased at £12 an acre or so, were bitterly disappointed in the result; for, so far from that sum, or anything near it, being offered, only £4 was given in some cases; and as if this were not bad enough, I believe that some unfortunate farmers were obliged to throw the Irish acre in. These are the statements which I heard, and while I give them, you will understand me as not vouching for the truth of them; I only tell you what I heard in Donegal, and in other places, a few days ago. If it is not the fact, there is no harm done, for the statement can be easily contradicted, and the true facts set forth, if I am misinformed. I will now just say a word on another important matter in connexion with the growth of flax, I mean the saving of the seed—(hear, hear)—and if this Society had done nothing more than to issue instructions on this head, it would be entitled to the thanks of the community. Any one who travelled through the country as I did, would see the necessity of paying attention to the saving of seed. I passed miles along, and what did I see? Why, they rolled—or rowled, as they called it—the flax on the roads, in order that the seeds might be beaten out by horses, or cart wheels. I spoke to the people about the great waste they were committing in the loss of the seed; but they only said in reference to their trespass on the roads—"Oh, Sir," sure you won't tell the police." (A laugh.) It was quite vain to draw their attention to the value of the seed, and the loss they sustained in so wasting it. There they had the road all strewed over with bales of the flax. (Hear, hear.) The fact is, if I had only a wish to make a fortune, I would go round the country, and buy up all the seed; not at what the farmers would ask for it, for they did not know the value of it, but on whatever terms I proposed myself. (A laugh.) I do not know that I have anything further to speak to you about; and I shall now conclude, by calling on the secretary to read for you the annual report.

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* NOTE.—This practice, of course, could not be recommended.

James MacAdam, jun., Esq., then rose, and said that, before he read the report, he would observe, that some gentlemen had written to him that they had intended to be present that day, but were prevented, from unexpected causes. Among them were the Earl of Enniskillen, Viscount Bangor, Viscount Bernard, M.P., Lord de Ros, Sir R. Kane, &c., &c.

Lord Bernard's letter was as follows:—

"*Castle-Bernard, Nov.* 25, 1851.

"My dear Sir,—I regret that it is not in my power to attend the meeting of the Royal Flax Association, on Friday next, in Belfast. I should, therefore, feel much obliged by your laying the enclosed report of the Bandon Flax Society before the meeting. About 900 acres of flax have been grown, this year, in the West Riding of the County Cork; and I have every reason to believe, that the quantity sown next year will be very much larger, in consequence of the establishment of a scutching-mill and rettery in the town of Bandon.

"I am anxious to avail myself of the opportunity of expressing my thanks for the valuable assistance afforded to us by the Royal Flax Association. To the excellent advice given by Mr. Haslett and Mr. Boyle, and to the constant and untiring exertions of the latter gentleman, the Bandon Flax Society is in no small degree indebted for its success.—Believe me, my dear Sir, yours truly, "BERNARD."

The following is the document referred to, in the above letter :—

"REPORT OF THE BANDON FLAX ASSOCIATION.—The Committee of the Bandon Flax Association beg to congratulate the gentlemen and farmers who have grown flax in the district, upon the success which has attended their exertions by the establishment, by Messrs. Clear & Co., of a retting and scutching mill in the immediate vicinity of Bandon, and of the railway. The report which the Committee have received of the specimens which they forwarded to Belfast, has shewn that flax grown near Bandon can bear comparison with that grown in any part of Ireland. The fact that flax has been grown for four successive years, near Bandon, without deteriorating the quality of the fibre, or injuring the land, removes any doubt as to the capabilities of the soil of the neighbourhood for the growth of flax. The colour of the flax has proved the excellence of the water for retting, of which there is an abundant supply, pure and soft. The Committee have every reason to hope that, before long, the flax grown will be manufactured in the district; all hands (of which a sufficient number can always be obtained) employed, and Bandon again become a manufacturing town. The Committee would respectfully remind the Guardians of Clonakilty, Skibbereen, Skull, Bantry, Dunmanway, and Kinsale, that, in their respective unions, the same, and, in many cases, greater facilities exist, and that the same success is likely to attend an attempt to revive the cultivation of flax."

The CHAIRMAN stated that he had received a letter from the Earl of Roden, regretting that he was unable to attend the meeting, owing to an engagement in Dublin.

Mr. MACADAM then proceeded to read the annual report, of which the following is a copy:—

"ELEVENTH ANNUAL REPORT OF THE COMMITTEE TO THE ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

"In laying before you this their eleventh annual report, your Committee feel warranted in congratulating you on the great progress which has been made, during the last twelve months, towards the attainment of the Society's objects. At the same time, they are constrained to crave your indulgence in reviewing their labours, as they feel conscious, that, while their best exertions have been used to ensure the favourable conduct of a great national undertaking, circumstances beyond their control have, in many cases, prevented them from accomplishing all that they could have wished. It will be necessary for them to recur to topics which have been already frequently brought forward at the annual meetings of the Society; but they feel assured, that you will readily pardon such repetitions, in recognising how necessary it is to keep certain leading facts constantly before the public.

" GOVERNMENT AID.

"During the first four years of the Society's existence, the efforts of your Committee were chiefly confined to the improvement of flax cultivation in Ulster, by the dissemination of practical information on the systems most in use in those Continental States where the finest flax is produced, and by the introduction of improved machinery for the separation of the fibre. In 1845, having made considerable progress among the Northern flax growers, your Committee proceeded to introduce the crop into the other provinces of Ireland, where it was then almost unknown, from a conviction that great and lasting benefit would accrue to the agriculture of those districts, from the profit and employment which would thus be made available. To meet the increased expenditure entailed by these extended operations, a large special subscription was raised, principally among the Irish flax spinners, with liberal contributions from many of the leading English and Scotch firms. The sums so obtained, amounting to about £2,000, enabled your Committee, during 1846 and 1847, to make a favourable commencement in many districts of the Southern and Western provinces. The attention of their landed proprietors having been thus awakened to the importance of the question, it is probable that they would have come forward to relieve the Society of the expenses of instruction; but, in the latter year, the awful visitation of the potato blight, and its consequent famine, at once paralysed the landlords, by depriving them of the necessary means. Your Committee, under these melancholy circumstances, felt it the more imperative to do their part towards developing the agricultural resources of the country, and thus to assist in alleviating the universal distress; but, at the same time, they were aware that they should not be justified in diverting the usual income of the Society, derived almost exclusively from the North of Ireland, to the districts in question; and they found those who had so liberally given them the means of breaking ground indisposed to continue their subscriptions on so extended a scale. In this dilemma, they submitted the case to the Lord Lieutenant; and his Excellency, with a sense of the importance of the interests involved, which has, up to the present moment, continued to influence his acts, at once afforded them the means of continuing in the good work they had so favourably begun. The Irish Reproductive Loan Fund is the source from which this subsidy was derived, and consists of a large sum of money, the residue of subscriptions raised during a former Irish famine, and taken under the control of the Treasury by the Act 11 & 12 Vic., c. 115, to be applied to industrial purposes in certain counties of Munster and Connaught, on the recommendation of the Lord Lieutenant of Ireland for the time being.

"The Society received from this source a grant of £1,000 in 1848, and a similar sum in each of the years 1849 and 1850. The Chancellor of the Exchequer was indisposed to continue this grant in the present year; but a deputation from the Society, accompanied by about thirty Members of Parliament, having waited upon him, in the month of June, and explained the reasons which urged them to seek renewed aid, he consented to place a further sum of £1,000 at the Society's disposal, to be applied to similar purposes, in the same districts as before. Your Committee were, consequently, enabled to send their instructors to all the localities which had applied for them, and thus to provide that practical information on the management of the flax crop which is indispensable to success.

"The substantial assistance rendered to the Society by the Lord Lieutenant, and his continued and consistent support of its objects and of the interests of the linen manufacture, led, during the year, to the presentation of a testimonial to his Excellency, which was contributed by the private subscriptions of seventy-six members of the Society.

"GENERAL OPERATIONS.

"In 1851, as in the previous year, the operations of the Society may be classed under two distinct heads—the first embracing those districts which contributed the required sums either through the local farming societies, branches, or Committees organised in connexion with the parent Society, or as the subscriptions of individual landed proprietors; the second comprising the counties to which the expenditure of the Government funds is expressly limited. In the former, a local organisation was arranged at Louth, Ballymahon, Roscrea, Carlow, Kilkenny, Inistioge, Waterford, Wexford, Bandon, Stradbally, Tullamore, Nenagh, Fethard and Limerick; and, including the estates of subscribers, the Society's operations embraced districts of the Counties of Donegal, Londonderry, Antrim, Down, Fermanagh, Longford, Westmeath, Louth, King's and Queen's Counties, Carlow, Kilkenny, Limerick, and Wexford. The counties comprised in the second category were, Cork, Kerry, Clare, Tipperary, Galway, Mayo, Sligo, Leitrim, and Roscommon. Including both classes, twenty-four of the Society's instructors were employed at the sowing and pulling seasons, in the usual routine of practical superintendence. In order to secure that proper soils should be selected for the crop, and that it should be suitably prepared during the Winter, four of the instructors were sent at that season to a number of the above-named districts, and, as far as their advice was attended to, the growers were enabled to make the preliminary preparations in such a manner as to guard against the loss and disappointment which otherwise would have been caused by inattention to these matters. The spread of the hot-water system of steeping required that particular instructions should be given in the mode of saving flax straw for sale to the retteries, and your Committee believe that the last two years' experience will lead to considerable improvements in the harvesting operations, so as to secure that the straw shall be free from the faults which lessen its value to the steeper, and consequently affect the price obtained by the grower. The services of the instructors have generally given satisfaction, and several have distinguished themselves by the zeal and care with which they have discharged their very important and onerous duties. As it was of considerable moment that a thoroughly experienced person should act as inspector over the Southern districts, Mr. Haslett was appointed to that office, and your Committee feel called on to express their marked approval of the manner in which he acquitted himself of the task, as well as of the very high character, both personally and professionally, which he has borne during the eleven years that he has been connected with the Society. Allusion might be made, did the limits of this report admit of it, to several of the instructors who have distinguished themselves for their ability; but it will be sufficient to state generally, that very few instances of misconduct or inefficiency have occurred, although the results of carelessness and neglect of their advice, on the part of farmers and labourers, has been often laid to their charge. Such accusations have been always investigated, and in the few cases where they have been proved against any of the instructors, your Committee have at once dismissed them, feeling strongly, that on the skill, intelligence, and steadiness of those instructors is mainly dependent the success of the Society's exertions.

"THE FLAX CROP OF 1850 AND 1851.

"It is again satisfactory to note the continued increase of flax cultivation in Ireland. From the valuable and accurate returns of Irish agricultural produce, compiled by Government, your Committee learn that, in 1848, there were 53,863 acres under the crop; in 1849, 60,014; and in 1850, 91,040. The returns for 1851, though not as yet published, have, through the kindness of the Lord Lieutenant, been specially made out for the Society by the census commissioners, and shew the very great breadth of 138,619 acres; so that the extent of the crop is this year nearly two and three quarter times what it was about three years ago, and probably by much the greatest ever sown in Ireland. In analyzing the Government tables, several interesting features present themselves. The growth of flax without the bounds of Ulster is given at 2,660 acres in 1840; 5,975 in 1850; and 14,893 in 1851. The largest quantity of flax grown in any Irish county, this year, is 20,955 acres in Donegal, and the smallest, 21, in Dublin. The largest quantity out of Ulster, is 2,698 acres in Cork. Mayo, with 1,460; Louth, 1,439; and Clare, 1,000, come next in order. Notwithstanding the increase in the South and West, the small extent, as yet, of this culture, in those districts, is at once evident, on comparing Ulster with Munster. The former province, which has an area of 5,475,408 acres, has 137,726 under flax, or 1 in 44; the latter, with an area of 6,064,579 acres, shews but 5,823 of flax, or 1 in 1,039. Fermanagh, which has the least flax among the Ulster counties, gives, for 457,195 of area, 2,808, or 1 in 162, under that crop; and Cork, which has the most flax among the counties of Munster, has, in an area of 1,846,333 acres, 2,698 of flax, or 1 in 684. It is very satisfactory, however, that there has been so considerable and rapid an increase in the Provinces of Leinster, Munster, and Connaught, as from 2,663 acres in 1849, to 14,875 in 1851, or nearly six hundred per cent. in two years. The average yield of fibre per statute acre, throughout Ireland, has been, on the authority of the returns, a fraction under 5 cwt., in each of the last three years. This year, the produce is admitted to be considerably over an average; and, taking it at 5¼ cwt., the entire quantity of fibre on the Irish flax crop of 1851, 138,611 acres, would be 36,388 tons, which, at £45 per ton, would give an amount of £1,637,460. To this may be added the value of the seed that has been saved, either in the straw dried for the retteries, or by rippling, probably the produce of 20,000 acres, which, at crushing value, would give £3 per acre, or £60,000; thus giving a gross total of about £1,700,000 sterling as the amount realised for the Irish flax crop of this year. The quality of the fibre is much superior to that of the preceding crop, and the growers have been generally well remunerated, where proper attention has been paid. It is interesting to observe that, owing to the large quantity and good quality of the home grown crop, the imports from Russia, this year, are greatly less than for many previous years, and the English and Scotch spinners have been purchasing extensively in our markets.

"DEVELOPMENT OF SCHENCK'S STEEPING SYSTEM.

"In 1848, the late Mr. Schenck, of New York, laid before your Committee his plan of steeping flax in water maintained artificially at a high, uniform temperature, by which this operation could be effected with certainty in sixty hours, in place of requiring an uncertain period of several days or even weeks, from the action of atmospheric changes. After a lengthened and severe scrutiny, this method was found to possess advantages which warranted your Committee in recommending its general adoption, not by farmers, but by persons possessing capital and commercial experience, who should purchase the straw from the growers, and prepare the fibre for their own profit. The first rettery on this principle was established in Mayo, in 1848; and the system has been yearly extended, until, at the present time, eighteen of these concerns are in a working state. Their positions are as follow:—In Ulster:—near Strabane, County Derry; Toome, County Antrim; Cregagh, County Down; Glasslough and Ballybay, County Monaghan. In Leinster:—Dunleer and Mount Pleasant, County Louth; Ballymahon, County Longford; Roscrea, King's County; Latimerstown, County Wexford. In Munster:—Kildinan, Youghal, and Drimoleague, County Cork; Limerick; Nenagh and Clonmel, County Tipperary. In Connaught:—Newport and Ballina, County Mayo. Besides these, large purchases of flax have been made in other districts where retteries are likely to be established, or other means adopted of preparing flax on a large scale. The chief are Cogry and Moyaver, County Antrim; Portaferry, Craigdaragh, and Tullygirvan, County Down; Carrickmacross, County Monaghan; Galway; Waterford; Carlow; and Bandon, County Cork. The entire quantity of flax purchased from the farmers in the straw is estimated at 17,000 tons, or the produce of about 8,500 acres. Where proper care has been given to the choice of soils, the selection of seed, and the details of culture, the prices paid for the straw have afforded a fair remuneration to the growers. But where, through inattention to these points, or idleness and want of skill in the labourers, the crop has proved indifferent, or the expenses of culture have been unnecessarily heavy, the growers are dissatisfied with their returns. The choice which is open to the Ulster farmer, of steeping his flax in the usual way, and having it scutched at a mill, in case he thinks the prices offered at the retteries, for his straw, not sufficiently remunerative, appears to your Committee of great value. But, in districts just entering upon flax cultivation, until scutch mills be established, the farmer has no option but selling to the nearest rettery. It is evident, however, that, by affording a ready market for flax straw, the retteries induce many persons to adopt flax cultivation who would otherwise be unable or unwilling to do so, from the want of facilities for steeping on their farms, or to increase their breadth of flax beyond that limit to which they might otherwise be confined by their extent of accommodation in steep-pools, or the supply of labour. There can be no doubt that the establishment of retteries is the most certain means of extending the growth of flax to districts in which it is a novelty, more especially among a people of so little agricultural skill as the occupiers of the South and West of Ireland. It is for this reason that your Committee continue to attach so much importance to Schenck's system, or to any other which may possess the great advantage of facilitating the division of labour.

"QUALITY OF FIBRE PRODUCED BY HOT-WATER RATING.

"The tests to which your Committee submitted the fibre steeped on Schenck's method, and which they detailed in a special report laid before the Society's last annual meeting, were sufficient to prove that flax so treated may be made of equal value for all manufacturing purposes to that prepared in the ordinary way.

"Since then it has been occasionally reported to them, that complaints were made on the weakness of the fibre and its want of cleanness. Your Committee, however, from their previous knowledge, and from certain facts with which they have lately become acquainted, have every reason to believe that, while these complaints have undoubtedly had some foundation, they have been caused by the manner in which the fibre has been prepared, and not from any inherent defect in the principle of the process; and they have every confidence that great improvements will be made by the practical persons who are now, in different localities, carrying out the system, as they have already received several communications detailing valuable discoveries incidentally made in the course of working. They are also certain, that much of the blame thrown upon the new steeping system has arisen from the quality of last year's crop of flax being so indifferent that, even when steeped in the usual way, it was necessary to mix it with foreign flax to enable it to be spun. They would beg your attention to some specimens of fibre, prepared on Schenck's system, from this year's crop, which they believe you will consider satisfactory as to quality, colour, and strength. It is of much importance that the proprietors and managers of retteries should continue to experiment on the best modes of conducting the various processes, and that they should communicate to the Society the result of their investigations, that they may be made generally useful.

"NEW MODES OF RATING.

"The great interest at present excited by the culture and preparation of flax, not only in this country but in most of the continental States, has caused persons of experience and intelligence to direct their attention to improvements of various kinds, more especially in the separation of the fibre. Sir G. R. Farmer, Bart., of Bideford, Devonshire, has, for some time past, been in communication with your Committee relative to a discovery by which he proposes to rate flax straw in 10 hours. As yet enough is not known of his process to warrant an expression of opinion on its merits, but the subject is receiving all necessary attention. Mr. Bower, of Rawcliffe, near Selby, has also submitted a very curious plan of rating, in metal cylinders, by exhaustion of the atmospheric air and subsequent saturation of the straw with hot water. This is, also, under consideration, and your Committee hope soon to be in a position to report upon it. The advantages which Schenck's system has been found to possess, have not, for a moment, induced your Committee to neglect any new invention likely to be of service. On the contrary, they have always courted such suggestions, and have given every encouragement and facility to inventors to explain their views. It is most satisfactory to find that so much attention is now being directed to the subject, and they feel strongly that, notwithstanding all the improvements that have been carried out, much remains to be done before the preparation of flax shall have reached perfection. Most happy and important results may naturally be anticipated for the linen manufacture, from the amount of skill and ingenuity which is now being brought to bear upon the treatment of its raw material.

"FLAX-COTTON.

"As custodians of the trust you have confided to them, and with a sense of the weight which the position and experience of the Society attach to its expressed opinions, your Committee, while most anxious to weigh the true merits of every new invention connected with the culture and preparation of flax, and to pronounce an unbiassed opinion on it, have, at the same time, felt it incumbent upon them to caution the public against projects which appeared to rest on unsound data, or to possess inherent defects. When Mr. Donlan brought forward, in London, his plan of preparing flax fibre without steeping, they endeavoured to shew that it was unsuitable in this state for the general purposes of the linen manufacture; while admitting that it might be employed for certain coarse fabrics, not requiring to be bleached. Soon after this question had been disposed of, another arose, in the proposition of M. Claussen, to convert flax fibre into a material resembling cotton, and capable of being spun on cotton machinery. The basis of this project appeared to your Committee unsatisfactory, since the steeped fibre is intrinsically more valuable than the flax-cotton which it was proposed to prepare; and the calculation of yield appeared so totally at variance with all experience, that no reliance could be placed on the estimates of the inventor. The statements put forward in support of the scheme, by a leading London journal, were evidently so erroneous that it was deemed advisable to lay before the Royal Agricultural Improvement Society of England, in the month of April last, a statement, shewing the mistakes into which the writer had fallen, and thus to endeavour to secure that body as the representative of British agriculture, from taking up an obviously unsound theory, to the neglect of the really tangible merits of flax cultivation in its well understood forms. Since that time, although many confident statements have been put forward, no real progress has been made by the advocates of flax-cotton, and your Committee feel called upon to renew their caution, in the absence, as yet, of any practical opinion as to the correctness of the inventor's assertions. An investigation, recently undertaken at Kildinan, under the direction of Sir Robert Kane, has not led to any result, and although your Committee have expressed their anxiety to give the process a fair trial in Ulster, the inventor has not thought fit to avail himself of their offer. It would, of course, be a matter of great satisfaction to the Society if new modes of employing flax fibre could be found, and it is probable that conversion into flax-cotton might give an increased value to scutching-tow and inferior flax; but even of this it is not advisable to be sanguine, until some other evidence than the unsubstatiated promises of the inventor and his agents is brought forward to demonstrate that the substance termed flax-cotton possesses a real commercial value, and can be profitably employed in manufactures.

"SCUTCH MILLS.

"The establishment of scutch mills appears to be indispensable to the permanent adoption of flax cultivation in new districts; but, notwithstanding the earnest advice given on this head, as yet but small progress has been made. It is of little value that the flax plant can be well grown, in a locality, if efficient and economical means of preparing it for sale be not provided. The experience of the Society has shewn, that hand-scutching is unsuitable, from its expense, except where small growers can prepare their produce by the labour of their own families. So convinced did your Committee feel of this, that they publicly cautioned the people of the South and West, before the sowing was commenced, against growing flax where no prospect existed of retteries being established which would afford a market for the straw, or of scutch mills being erected where the fibre could be prepared for sale. Unfortunately, this advice was, in numerous instances, disregarded, chiefly in consequence of the promoters of the flax-cotton scheme advertising that they would be prepared to buy any quantity of flax straw, at high prices. The result was, that, when the crop reached maturity, the growers who had relied on this means of obtaining a market, found that the promised buyers were not forthcoming; and the retteries already established not being sufficient to work up the large quantity produced, the flax straw was left on their hands, causing great disappointment and dissatisfaction, and tending to deter them from following up its culture in future years. It appears strange, that, when the sole difficulty in the way of the permanent introduction of this profitable crop, in new districts, is the want of means for bringing the fibre to a marketable state, landed proprietors should not, at once, for the joint advantage of their tenantry and themselves, provide the necessary machinery. With the knowledge of what vital importance it is to them that their tenantry should be enabled to hold their lands and make a profit by them, it is strange that so slight a difficulty should become a stumblingblock. There were certain cases, however, where, in consequence of the reduced condition of landed proprietors, they were for the moment unable, however willing, to bear the necessary outlay of buildings and machinery. At the suggestion of some proprietors, your Committee endeavoured to procure the sanction of Government to the extension of the powers of the Land Improvement Advances (Ireland) Act, so as to include, in the Farm Building Clause, loans for buildings for the seeding, steeping, scutching, and drying of Flax. The Board of Works was in favour of this extension, the Lord Lieutenant recommended it, but your Committee were unable to induce the Chancellor of the Exchequer to accede to it. They are not without hopes of yet obtaining the necessary powers; and they do not intend to lose sight of the matter.

"UNSTEEPED FIBRE.

"It has been stated that some of the spinners of yarns adapted to the coarser fabrics, at Dundee, and elsewhere, could employ the fibre of flax, separated by mechanical means, without steeping. Although it is evident that a much greater value can be given to the fibre by the ordinary process of steeping, it may be well that the grower should have the option of preparing it in this way, either where the fibre is naturally of inferior quality, or where, as is in some instances the case this year, no scutching machinery exists in the neighbourhood for preparing the steeped flax, and no rettery for the purchase of the straw. Your Committee find that machines can be furnished, at a moderate cost, capable of taking off the dry fibre, and they are prepared to give full information to those who may be desirous of adopting this method of bringing their crop to a marketable state.

"SAVING OF FLAXSEED.

"Year after year, the annual reports have contained earnest recommendations that the seed of the Irish flax crop, instead of being rotted with the stems in the pools, should be taken off, by rippling, to be employed for sowing, sold to the oil-mills, or used by the farmer as food for his live stock. The Society's instructors have constantly endeavoured to inculcate the importance of this economy. But, so deep-rooted is the prejudice against saving the seed, that as yet it is only to a limited extent that farmers have attended to this advice, although it has been repeatedly stated that in all the other flax-growing countries of the world the seed is saved; and that the finest Flemish flax rarely equalled in Ireland, is produced from plants from which the seed has been taken: many farmers will not be convinced, and continue to throw away a portion of the produce, for which the crop is alone cultivated in some countries, where the straw is used as thatch. Your Committee are, however, not without hope, that a more rational practice will creep in by degrees; and they are pleased to learn that, this year, about 8,000 bushels of rippled seed have been purchased at the Belfast oil-mills, from a few districts in the County of Down. When it is calculated that, at least, 100,000 acres of flax have been steeped in Ireland, this year, without the seed having been taken off, and that the latter, at mere crushing prices, would be worth £300,000, this lamentable loss of national wealth, which would, alone, be sufficient to feed 100,000 paupers annually, must be deeply deplored. It has been stated that, where flax has been dried in the straw, and the seed saved, by steeping in the pools twice, in the following year, the fibre can be produced of as good quality as where the plant is steeped green. Attention should be given to this method, which has lately been much practised in Belgium, as, if such be the case, all objections to drying the seed on the stem would be met.

"SOWING-SEED.

" The use of home-saved seed for sowing has been gradually extending, and its advantages, under certain restrictions, have been frequently pointed out. Experience has shewn that there are certain soils and varieties of climate in Ireland unfitted for the maturing of seed sufficiently prime for sowing, though very suitable for crushing or feeding purposes. Where seed has been saved, under favourable circumstances, from a sowing of Riga seed, it has invariably proved of superior qualities to any other, and can be safely recommended; and it will be important to ascertain, by experiment, whether a change of seed from different soils may not sufficiently renew the vigour of the plant. All the disappointment which has periodically arisen from an insufficient supply of foreign seed, or from its inferior quality, can be properly obviated by attention to home-saving; and, if carefully carried out, the import of foreign seed would constitute rather an auxiliary to, and a renovater of, the home-saved stock, than the exclusive source of supply which it has hitherto been.

"SALE OF FLAX.

" Frequent inquiry has been made, by growers in localities commencing flax culture, as to how they should find sale for their produce. Where retteries are established, the market is at once found. But where they are not, or where the grower may prefer to steep it himself and have it scutched in a mill, another organisation will be rendered necessary for bringing the fibre to the consumer. Until flax be extensively grown in a district, it will be necessary for the farmer, or for his landlord, on the part of a number of tenants, to send it to the nearest spinning mart. In Ireland, Belfast, Drogheda, and Celbridge are the most available points; or, should the grower prefer to seek a more distant market, Leeds or Dundee may be selected. In all these places the spinners will buy the flax without any intermediate party; but the value will be best obtained by consigning the article to a broker, who, for a small commission, will obtain the highest market value. When flax-growing increases, and the quantity produced would be worth the attention of spinners, there can be no doubt that buyers would attend, in the large towns, on certain days mutually agreed upon, and purchase from the growers whatever quantity they would expose for sale.

"INCREASED CONSUMPTION.

"The present demand for flax, in Ireland, is about double what it was when the Society was established. In 1841, the Irish spinning trade numbered 250,000 spindles. Now it is close upon half-a-million. In place of 16,000 tons of flax, which was the extent of consumption in 1841, 32,000 tons are now required by the Irish trade. The entire consumption of the United Kingdom would, at present, require 500,000 acres of flax annually, and it is progressively increasing at a pretty rapid rate. As has been before repeatedly stated, any surplus produced would find a ready market in France, the United States of America, and Belgium, all of which now import the inferior flaxes of Russia to a large extent.

"THE GREAT EXHIBITION AND FOREIGN VISITERS.

"In order that the raw material of Ireland's staple manufacture should not be absent from the great display of the world's productions, a small selection of scutched and hackled flax was exhibited by the Society in the Crystal Palace. The difficulty of obtaining good samples, at the end of a season the most unfavourable for quality that had been known for a long period, rendered the display a very inadequate and unfavourable representation of the present position of flax culture in Ireland. Nevertheless, the well known success of the Society, and its reputation at home and abroad, induced the Royal Commissioners to award to it a Council medal —the only prize of that rank granted among Irish Exhibitors—'for its sustained and successful exertions to improve the cultivation of flax'

"The interest, which has for some time past prevailed in foreign countries, on the subject of flax culture, and the curiosity excited by the Society's labours, caused a considerable number of persons to come from the Exhibition to Belfast, in order to inquire into the improvements in culture and preparation which the Society has introduced. Among these were individuals from Russia, Prussia, Austria, Saxony, Bavaria, Wurtemberg, Spain, France, Sweden, and Sardinia. According to your Committee's invariable practice, all were received with courtesy, and the information they required was freely accorded them. The Society's Instructors have always been well received on their visits to Belgium, and in reciprocating such good feeling to foreigners, it has appeared to your Committee that, while no attempt to conceal improvements can prevent them from being ultimately discovered, it is of great advantage to Ireland, that such generous rivalry should be encouraged, as she, in her turn, may profit, as she has already profited, by foreign improvements; and it must be considered as a privilege, that the Society has thus been enabled, though but in a slight degree, to cement those bonds of good feeling and mutual friendly offices which, by encouraging international commerce, must tend to the advantage of the world at large.

"CONCLUSION.

"Eleven years ago, when this Society was instituted, there were many who thought its views difficult, if not impossible, of accomplishment. The increased and improved cultivation of flax was a subject of little beyond local interest; and, for some time, the labours of the Society were looked upon rather with curiosity than with a feeling of their importance. Since then, grave political and social changes have occurred to alter the opinions of many; persevering and energetic exertions have had their due weight; and the progress of a manufacture which is one of the four great textiles employed in the clothing of the civilised world, has demanded increased attention to the supply of its raw material. There appears to be, throughout Europe, a lively attention excited by this question; and it is no little gratifying to your Committee to be applied to by foreign Governments, as the fountain-head of sound information upon it. At Berlin, a Society, on the model of our own, has been founded. In England and Scotland, preparations on an extensive scale are being made for embarking in flax culture; and in Ireland—the end and aim of the Society's labours—the chief difficulty seems now to consist in keeping the matter within reasonable bounds, and in preventing too hasty and indiscriminate attempts from being made before all requisite local facilities have been provided for the profitable prosecution of the undertaking. In the low state of agriculture in Ireland, and with the peculiarities of her social state, there are difficulties in the way of the Society, which would be unknown in countries of more advanced intelligence. But that these difficulties are not insuperable, the progress already made sufficiently indicates. The active and sustained co-operation of landed proprietors is indispensable, and your Committee hope they will be sufficiently alive to the vital necessity of exertion, to induce them to do their part. The efforts of the Society, however great, cannot reach beyond sound advice and practical teaching. The perseverance, enterprise, and self-reliance necessary to secure success can only be supplied by the people themselves. It is to be hoped, that the ordeal through which the country has been passing will arouse to exertion all whose position in society and whose educational advantages have endowed them with the means of usefulness. The present state of flax culture in the South and West of Ireland is a critical one. With proper care and judicious direction, it may be made the basis of a widely-spreading system, calculated to confer lasting benefits on the owners and occupiers of the soil. Your Committee cheerfully pledge themselves to spare no effort on their part to secure the success of the movement; but they certainly look to landed proprietors for equal exertion; and they feel assured, that the importance of the end in view is sufficient to encourage both to further efforts, since, whether as regards profit to the farmer, employment to the labourer, or advantage to the only manufacture which has taken firm root in Ireland, the benefits to be derived from the extended cultivation of flax place it among the greatest and most readily available means of improving the condition of this kingdom."

Mr. MacAdam next read a draft of the balance-sheet. From it it appeared that, from 31st Oct., 1850, to the same date this year, there was a balance on hand, from last year, of £365 4s 11d; amount since received in subscriptions, £547 5s; £584 14s 11d from the Belfast Banking Company, on account of Government grant of £1,000 for this year, which had not been remitted by the Treasury before the accounts were made up—total, £1,497 4s 10d; expenditure, £1,469 2s 3d; balance, cash on hands, £28 2s 10d.

The Earl of Erne then rose to move the first resolution (that the report be adopted, together with the statement of accounts, and that it be printed and circulated.) His Lordship said—The first resolution has been placed in my hand, and I beg to assure your lordship and this very numerous meeting, that I propose it with very great pleasure; and I can only regret that from the distance at which I live from Belfast I am not able to attend your meetings so regularly, or make myself so well acquainted with the excellent working of your Society as I would wish to be; for, certainly, it is my decided conviction (and I have expressed it often before), that no Society which has ever been established in Ireland was so productive of benefit, or of so great use to the farmers, as the Royal Flax Society. (Hear, hear.) And while I feel so, I also must express my wonder that the landed proprietors and gentry of Ireland do not come forward, and by the payment of their subscriptions, give the benefit of their aid to this Society, which does so much good in return. (Hear, hear.) But it is to my utter astonishment that I find the landed proprietors generally of Ulster do not come forward to aid you, because they must see the advantages you offer: they must see, day by day, the improvements in the growth and cultivation of flax which this Society has been the means of introducing, since its establishment 10 years ago.

Chairman—Eleven years.

The Earl of Erne—Yes, eleven years ago. For myself, I am glad to be able to testify, in my own person, the advantages which I have derived, from being a member of this Society, for seven or eight years. In the County Donegal, flax, though grown pretty extensively there, has not attained the perfection which it ought. I became a member of this Society, and, by becoming a member, I was enabled to correspond with your Secretary. By being a member, I received your valuable reports. By being a member, I received different documents published by the Society, and I distributed them to those who intended to grow flax. By being a member, I was enabled to get the useful services of a practical instructor—(hear, hear)—a man acquainted with the proper cultivation of the plant, who would go among the people, direct them, and give them the proper instructions on the most approved methods of raising flax. Therefore can I testify to the great advantages of your Society; and, for the same reason, I must say it is to my utter astonishment I learn that the landed proprietors of Ulster are not all members. (Hear.) To be sure, I have been told by persons to whom I spoke on the subject—"Oh, you are too rich already—you are a very rich Society." This might have been supposed, from the statement that the Government had, through the Earl of Clarendon, given £1,000 yearly to the Society. However, such people must recollect, that, in giving this sum, the Government had made a proviso that it was to be expended in certain counties of the South and West only, which had, undoubtedly, the most need for it. Therefore, we of Ulster do not benefit one farthing by the grant of that money. We are only made the machinery through which it passes; but as for ourselves, we are not one iota richer from it. (Hear.) Therefore, we must hope that the gentlemen to whom I have alluded will come forward at once, and aid the Society liberally, not as before. With regard to another point, I am sorry to say, that our Society has been lately rather harshly dealt with; and some people have called us names, I believe. We are described as being a set of spinning-jennies—(a laugh)—flax merchants, linen merchants, and all such things. Well, I am not a flax merchant, nor a linen merchant. Indeed, I wish I was—I wish we had more flax merchants, and linen merchants. I do not think we have any class or profession of greater practical use or benefit to Ireland; and it would be a very different country if we had more of them. (Hear, hear.) So, with regard to the names they call us, I think we have the right side of the question. (Hear, hear.) But the complaint some people make against us is this:—Three or four different people have gone to great expense, no doubt, and labour, in bringing out different inventions for the most improved method of finishing and preparing the flax crop, after it is taken off the ground. No doubt, each of these gentlemen is quite in love with his own invention. They are like a man and his child. If any one had an ugly child he would be quite indignant with any one who would say that his child was crooked or ugly; and so with these people, they are quite indignant with us because we do not shew especial favour to their productions. We could not as yet do that. All we could do, we did. We said to them, bring your inventions to the highest state, and then, if you like to bring it to Belfast, and shew it to us in a satisfactory working state, we will recommend it as far as we can; but, as a society, we cannot say to the people, "here is an invention which you ought all to patronise." We could do no such thing at all. (Hear, hear.) It appears none of the gentlemen have established any of their inventions here; but, I believe one is in operation in Cork, and I understand another remains *in statu quô* in London. Mr. Schenck did come here, and when we saw his process proved satisfactorily to us, we gave him our support. We held out our hand to him, as we would have done to any one else, if we saw he deserved it; and we did whatever we could to extend his process, as we had confidence in its adaptation to the uses designed for it. Well, then, all I want to say further is this—that, when gentlemen hear any people blaming us for not having sanctioned the use of some of these inventions, they will recollect that we, as the Royal Society for the Promotion and

Improvement of the Growth of Flax in Ireland, cannot give our formal sanction to any such inventions. (Hear, hear.) With regard to what Lord Downshire stated, as to the prices offered, and paid, for flax, this year elsewhere, I may just say that when I had the honour of presiding at the meeting of this Society, I stated that I understood there were several gentlemen present from the South of Ireland, who were anxious to establish Branch Societies in their part of the country. I recollect having cautioned them to proceed with the greatest circumspection; indeed, I almost feared they would have thought I was throwing a damper over them altogether; but I felt it my duty to caution them how they proceeded. I referred to the great difficulty which they must have to meet there, which we have not to encounter—I mean the difficulty of getting purchasers for their crop. The farmers could grow the flax; but then where was the market for it; and, at all events, at our prices. They heard of the large prices flax brings here, and expected like returns; but when different gentlemen went down to purchase the flax, they were disappointed with the prices offered. No doubt, a difference of prices was natural; for perhaps their flax was not so good. Of course, they were greatly frightened at the low price offered to them, and the circumstance will, no doubt, have the effect of preventing them from being so sanguine in future. I myself have had several letters from the South, and the questions put to me in them amounted to this—"What are we to do with our flax?" I, of course, could not do more than give them my advice in the matter; but what I suggested to them was this—keep your flax over till another year, and, in the meantime, the landlords and others might be induced to subscribe for the purpose of getting up scutch-mills in convenient districts. That was all I could tell them; but, as that might not be satisfactory, I think that some good advice ought to be given to them on the subject; and any one here who could suggest anything to meet the evil, should come forward and state it. I could not tell them more than I did; and I hope that people will all club together, and get up the requisite number of scutch-mills in the different parts of Ireland. (Hear, hear) However, I hope some gentleman has a better plan, and we will gladly listen to it; for the matter is one of great importance. I need not say anything further to you. You have all heard the report read, and I am delighted to be able to congratulate the meeting upon its contents. It is ably drawn up by our intelligent secretary—(loud cries of "Hear, hear")—who feels such a deep interest in the Society, and devotes the greatest energy in the fulfilment of his duties. (Hear, hear.) I shall not, then, my Lord Downshire, trouble you or this meeting with any further remarks, but content myself with moving the first resolution. (His lordship then read the resolution, and resumed his seat amid applause.)

Major Humphreys, J.P., Strabane, seconded the resolution. He said—My Lord Downshire and gentlemen, I feel the greatest pleasure in seconding this resolution; and in rising here, I shall not venture to make any trespass on your time; because I would not feel justified in doing so, as this is the first time I have had the honour of being present at any of the annual meetings of this most invaluable Society. But, there are some circumstances with which I have been brought into immediate connexion; and from the intercourse I have with a large body of tenantry, and from the deep interest I take in the proceedings of this Society, and in the growth of the flax crop in Ireland, I would only just make a few brief remarks. In the first place, I would refer to a matter which has already been alluded to here to-day—I mean the saving of the seed. (Hear, hear.) That is a point of the utmost importance. It is quite clear, that, from our present habits, we throw away a most valuable part of the flax crop. I now speak of parts of Donegal and Tyrone, with which I am acquainted; and I may say of them that the seed there is universally lost. Now, to save the seed for the purposes of after-cultivation is one thing; and to save it for feeding cattle is quite a different matter. Tenants generally are not able to hold over a crop from one year to another, which must be done if they would have proper seed for the ensuing crop. But there is a way in which a beginning could be made, and it is this:—Suppose each tenant reserved a small portion of each crop, for that purpose—(I intend to submit the plan for the adoption of the tenantry where I reside)—a little would make a beginning—say the crop of a rood, for very small farmers; or half-an-acre, or an acre, as each would be able; then, year after year, this saving of seed could be gradually increased, till at length there would be a sufficient supply of good seed for each year's crop. I am quite satisfied, that the plan which I suggest would be found to meet the want we at present feel so much; and, instead of sending the very large sum, as you heard it stated in the report——

Mr. MacAdam—£300,000.

Major Humphreys—Instead of losing all that immense sum, we would be able to keep it in the country. (Hear, hear.) There is another subject on which the farmers have experienced the greatest difficulty, and in some cases serious—I mean the water in which flax is steeped. There has been found to be the greatest inequality in the flax which has been steeped in different waters. A portion of flax steeped in a certain water will produce a certain result; but another portion of flax, grown upon the same field, but put into different water, will appear quite different, owing to the different qualities of the water. (Hear, hear.) Now, I think it is most desirable that this Society should institute the necessary inquiries, and have proper analyses made of waters, in order that the farmer may know the description of water which he should use, and that which he should avoid. (Hear.) My Lord Downshire, and gentlemen, I have mentioned only these matters, because they occurred to me as being of a practical character, and under the conviction that they will be considered by practical men; and I have now only further the honour of seconding the resolution which has been moved by the Earl of Erne.

The Chairman then put the resolution, which was unanimously adopted.

The Right Hon. Lord Rossmore next rose, to move the next resolution, expressive of the Society's thanks to his Excellency the Lord Lieutenant, for his earnest sympathies in their exertions. His lordship said he had the greatest pleasure in moving the resolution, as it was one in which he cordially agreed. (Hear, hear.)

S. K. **Mulholland**, Esq., Eglantine, seconded the resolution. He said—My Lord Downshire, my lords and gentlemen, I rise at once, with great pleasure, to second this resolution, which is one of which the Lord Lieutenant is eminently deserving. I can say so from my own knowledge. I happen to have been frequently called on to attend on deputations to high official persons connected with the Government, and had many opportunities of observing the manner in which the representations of deputations were received. But, I can say, that on none of such occasions have I ever seen any Member of the Government manifesting a more eager desire to be useful, and to make himself thoroughly acquainted with the views of the deputation, than that by which the Earl of Clarendon has been characterised, whenever he was waited on. (Hear, hear.) He always entered into the minutiæ of every question, viewing it carefully in all its bearings; and frequently he would make the most pertinent suggestions—(hear, hear)—some of which I have known deputations to adopt, because they were sound in principle. (Hear, hear.) His Excellency is possessed of great clearsightedness, sound judgment, and painstaking anxiety to render his government in the highest degree useful to the people. (Hear, hear.) He saw that there was an over abundant population in Ireland, without available means of employment for them. He saw that the cultivation of flax would be of eminent service in bringing to them a share of prosperity; and he wisely desired to give so much aid as he could to the people in that direction, for, by inference, he also knew, that where there was prosperity there was also peace. (Hear, hear.) But, his Excellency did not content himself with merely using his influence in obtaining grants for this Society. His Excellency also shewed his practical sympathy in our objects, by supplying us with the most useful statistical details. (Hear, hear.) His attention has been much occupied with statistics; and he has had compiled by the police some particulars in reference to this crop, which are of the utmost importance. These reports were, of course, intended for Parliament only; but, through his kindness, his Excellency has given us the particulars in the first instance; and, from them, we have been able to introduce into our Report a variety of most interesting and instructive matters, which, otherwise, must have been shut out from it. In the next place, there is the item of £1,000 per annum which his Excellency had been the means of having granted for the better cultivation of the flax crop in the South and West. That is a most important feature of his Excellency's conduct. (Hear.) We, in the North, will be benefited very little by it; but, as the Earl of Erne said, we hope we will be benefited by the co-operation of all the landlords of the North. His Excellency has thrown the duty on them, and has allocated the grant for the benefit of the people of the South and West, where he knows it will be of greater use, and where the people are in greater need of help. (Hear, hear.) I have to apologise for having said so much—(no, no)—and now beg to second the resolution, and to say I do so with great pleasure. (Hear, hear.)

The resolution was then put from the chair, and it was carried unanimously.

Sir **James M. Stronge**, Bart., Tynan Abbey, rose to move the third resolution, to the effect that, as the instruction of flax-growers in the proper system of cultivating that crop was indispensable to their success, therefore the grants made through the Society, on the recommendation of the Lord Lieutenant, for the instruction of the Southern and Western districts, had been of the greatest importance to these localities; and it was the opinion of the meeting, that it was a most judicious mode of applying the fund from which these sums were derived. He said that, as the resolution had reference immediately to the people of the South, he was not, on that account, able to say anything upon it; but there was no necessity for any remarks, after what had been so well stated in the able and luminous Report which had been read by Mr. MacAdam. (Hear, hear.) He would, therefore, content himself by merely moving the resolution.

John Temple Reilly, Esq., J.P., D.L., Scarvagh-house, seconded the resolution. He said—My Lord Downshire, my lords and gentlemen, I have sincere pleasure in seconding the resolution which has just been proposed; and, in doing so, I may confidently congratulate the Society on the success with which it is invested on this its tenth anniversary——

The **Chairman**—This is the eleventh anniversary.

Mr. **Reilly**—Its eleventh anniversary. I have always considered that the proverbs spoke truly when they said—"There is much food in the tillage of the poor; but a great deal of it is wasted from want of judgment." I believe that it was to supply the evils resulting from that want of judgment that this Society was formed; and it has eminently met that end. (Hear.) I believe no Society in Ireland has been the means of supplying a greater amount of information to the farmers. Indeed, if it were only in the instructions which were supplied on the saving of the seed, it might be said to have done a great deal. (Hear, hear.) I can tell you, that this year a great deal of seed has been saved, and mainly owing to the instructions issued by this Society. (Hear, hear.) Mr. Reilly then said, he had further to state, as a fact worth recording, a circumstance which had come to his knowledge. The tenantry on one of the noble Chairman's townlands, near Banbridge, had all paid their rent, this year, to the very day; and they accounted for this unusual promptitude by saying, that "the flax had stood to them well, and they had made a hit by it." He conceived this practical evidence of the value of the crop to farmers, and, consequently, to landed proprietors, as most conclusive. (Hear, hear.)

The **Chairman** then put the resolution to the meeting, and it was passed.

A. **Shafto Adair**, Esq., M.P., moved the next resolution, to the effect that the extended culture of flax appeared, at the present time, to offer one of the most important means of improving the agriculture and manufactures of Ireland; and that the meeting regarded with much satisfaction the progress which had already been made, and urged on the Committee the continuance of their efforts towards so very desirable an object. Mr. Adair said, that in submitting that resolution to their notice, the first assertion which it contained—that the extended culture of flax at the present time offered one of the most important means of improving the agriculture and manufactures of Ireland—was completely justified by the facts which were stated in the very admirable Report submitted to, and adopted by, the meeting that day, he might dispense with any further trespass on their time, except such as was involved in simply calling on them for the affirmation of that assertion. But, there were one or two points to which he would refer in a few words; and, first of all, with regard to the effect of the interposition of this Society in improving the agriculture of this country. (Hear, hear.) He was of the opinion that these gratifying effects could scarcely be overestimated. (Hear, hear.) They all knew that, in order to realise any permanent improvement, reward must be the incentive; and the reward which was given to the improver of the growth of flax was one which was, perhaps, greater than followed in the case of any other crop. He had met with instances in which so much as three rents were realised from the profits of one crop; and, that morning, he was informed of the details of one case, in which the whole rent of a tenant was paid from the sale of the flax grown on a no very considerable portion of his farm, leaving the entire of the produce of the remaining part of the farm for the profit of the tenant. (Hear, hear.) Now, how important were these facts at a time when they might regard the potato crop lost to Ireland as a staple crop? He need not dwell on them in the presence of such a meeting, composed of men practically conversant with the subject. But, in addition to the position he had laid down—that reward was the great incentive to improvement, and that a great improvement had taken place in the growth of flax in Ireland—he would also observe, that there were other points to which he had to direct the attention of flax growers, which were essential to a successful cultivation of the crop. He would remind them, that just in proportion as the reward was great for the proper management and treatment of the flax crop, so was the loss certain for any negligent or improper methods of growing it. (Hear, hear.) They were all aware that the land must be well prepared for the reception of the seed; and that the very quality of fertility in the land which gave health and strength, and nourishment to the plant, also gave the same vitality to that which would effectually destroy the crop; it would raise a crop of weeds under which the tender plant would perish. (Hear, hear.) His noble friend in the chair, who was himself a practical farmer, had just now placed in his hand a list of the weeds which were to be found in flax fields.

Chairman—Oh, that's only the half of them. (A laugh.)

Mr. Adair then read a list, in which mention was made of the brassica which was found in the Riga and Prussian seeds; redshank, found in the Dutch seeds; two varieties of thistles; scutch-grass; wild burrage, marigold, and other weeds. Mr. Adair then said that all these must be extirpated, before a crop could reach a healthy state of growth. He next said, there was another point to which great attention ought to be paid, as, without it, they could not calculate on the plant attaining its proper growth. He alluded to deep ploughing—that was indispensable, for if they ploughed thin, they merely opened up a portion of the surface whose properties were not sufficient for the sustainment of the plant, and the stiff, hard under-substance below the young plant was like a great metallic plate, which prevented the tender plant from drawing up from the soil the nourishment without which it could not survive. And it was also impervious to air, which was requisite for the plant. There was another point, which had been adverted to by Major Humphreys. The importance of saving the seed was very great—(hear, hear)—and when they thought of the great consumption of oil in their mills, and the requirements for the feeding and fattening of cattle, and the immense quantities of the seed which was thrown away as worthless, they would feel with him, that he could not impress too strongly on the growers of flax, the necessity of directing their attention to the saving of the seed. (Hear, hear.) But there was another point connected with this subject to which, in a national point of view, he attached much importance. They remembered that, when the potato crop failed, in 1846, the unanimous opinion was, that that crop could no longer be relied on as a staple crop for this country. With that the poor man's best means were gone; but flax-growing was earnestly urged then; and it was a most remarkable fact, that flax cultivation was, of all others, the poor man's crop. The noble Chairman was well acquainted with what was known as the allotment system in England. (Hear, hear.) Under it, persons were vested in a small farm who did not rely on farming for their support; they were persons who had some spare time to devote to the tillage of their little farms. Each held half-an-acre or three-quarters of an acre; and it had been found, that on these half-acre or three-quarter acre farms, so much as 16 coombs per acre had been raised; while usually there were only about 7 coombs on the same space. Therefore, he said it was the poor man's crop; for, the land which would give a rich return to large farmers who grew it as they ought, gave even a greater return to the poor man, under the close and constant manipulation (so to say) which the soil received from him, and the unceasing extirpation of weeds. (Hear.) It was at his door; he and his family could spend every otherwise unoccupied moment at it; and, as a consequence, it yielded a rich crop. In the County Monaghan, hand-scutching was pretty generally adopted; and, of course, when a man was able to have this done by his family, it was so much saved to him; and, therefore, that was an additional reason for calling flax the poor man's crop—(hear, hear)—and the same consideration made the cultivation of flax important, in a national point of view. Of course, men were induced to find employment according to the amount of wages paid, and to the ratio of the profits which they could realise; but, though men were so employed in mechanics or otherwise, still there were moments when he could not be so employed. (Hear, hear.) The weaver could not be always at his professional occupation; and he might, therefore, cultivate his little farm, in his leisure moments. He (Mr. Adair) did not mean to say that a man could be both a weaver and a farmer; but he could be a good weaver, and still be something of a grower of flax. (Hear, hear.) Then, there was another point, in reference to the manufactures of Ireland; and here another consideration occurred to him, which was important in a national point of view. They knew that manufactures required, for their full development, a continual reduction in the cost of producing the staple article; for, in proportion as a trade offered some profits, so much more were those engaged in it exposed to the competition of those others who would embark in it, allured by the prospect of similar gain. The cost of production of the staple article must, therefore, be brought down to the lowest point. Then, again, it often happened, that the introduction of manufactures was accompanied with positive injury to some interests; but there was the singular exception of flax manufactures, whose introduction, to whatever extent, must lead to a progressive increase of the national wealth; for every acre of flax which we grew diminished the amount of money which had to be sent out of the country for the purchase of the raw material. (Hear, hear.) The more acres grown in Ireland, the less money we had to send to Russia. The great principle on which the commercial relations of countries ought to be based was that of barter for the respective commodities of each; such as, for instance, distinguished our relations with America. We sent them our manufactured goods; they sent us in exchange their unmanufactured goods. But Russia, or the countries from which we were obliged to purchase flax and seed, took none of our goods. With the United States the case was different; they sent us their goods, and we sent them ours, to enable us to pay our debts. Consequently, by each acre of flax grown in Ireland, we enlarge our trade with those countries from which we import. This being the case, he could properly recommend the extended culture of flax at the present time, as calculated to offer one of the most important means of improving the agriculture and manufacture of the kingdom; and that being the case, he could with confidence submit the second part of the resolution to them, viz.—that the meeting regarded with much satisfaction the progress which had already been made, and urged on the Committee the continuance of their efforts towards so very desirable an object. (Hear, hear.)

Thos. Greg, Esq., J.P., Ballymenoch, seconded the resolution.

The Chairman was about to put it to the meeting, when

Sir J. M. Stronge said—I beg to take the liberty of here mentioning, in corroboration of what Mr. Adair has stated, that a small farmer who lives adjoining my place has made, from his flax crop, about £18 the English acre. (Hear, hear.) He had not quite three acres; and he sold it for 11s 9d per stone.

Major Humphreys—As Sir James Stronge has mentioned that case, I may say that I know another, in which a tenant had £25 from the acre.

Chairman—There was a tenant of mine who had £35 from the acre. (Hear, hear.)

The resolution was then put from the chair, and it was carried unanimously.

The Bishop of **Down** and **Connor** and **Dromore** rose to propose the next resolution, which was one of thanks to the Committee, for their untiring and impartial exertions in carrying out the objects of the Society. His lordship said—The resolution I have to propose is one which I readily submit to you; for, independently of its particular merits, it possesses a charm—it requires no speech. (A laugh.) After the Report which you have heard read, from your most efficient Secretary, which enters into every detail we require to be informed of, nothing is required from me to urge you to give your thanks to the Committee of the Society, for the painstaking and incessant exertions they have made to carry out the objects of the other members of the Society. (Hear, hear.) As practical men, you must know that the prosperity of your Society depends mainly on the working of the Committee; and, having been a vice-president of it, I can, of myself, vouch for the assiduity, and the zeal, and the attention with which they uniformly discharged their onerous duties. (Hear, hear.) From my position, I have taken a part in nearly all the charitable societies of the town; and I may say, from my experience of your Committee, that, in the excellence of their business habits, and perseverance of their exertions, they are not excelled by any other committee of the many in the town. (Hear, hear.) I am sure, therefore, they will gratefully receive the expression of the thanks of this large and highly-respectable meeting, as they will be a reward to them for their past exertions, and an encouragement to persevere in the future. (Hear, hear.)

Robert Jas. Tennent, Esq., M.P., rose to second the motion. He said —I have great pleasure in seconding this motion. I shall only say, that the object of the resolution is one in which there can be no second opinion. His lordship was right in saying, no speech was required in proposing it; and it would be unpardonable in me if *I* were to attempt to inflict a second speech upon a resolution which did not require *one*. (Laughter.)

The **Chairman** then put the resolution, and it was adopted unanimously.

Sir **Robert Bateson**, Bart., Belvoir Park, rose and said—My Lord Downshire, I can assure you that I do not come here to talk, or to teach, but to learn, if I possibly can; and the resolution which I hold in my hand is one which will require no speech, and, therefore, I will content myself with making only one or two observations. And allow me to congratulate, not only this Society, which was the first in Ireland to undertake the duty of promoting, and instructing in the growth of flax; but I congratulate also the country, upon the exhibition of this day. I am delighted when I see here so many noblemen and influential friends of Ireland, to lend the value of their patronage to a society which, I feel satisfied, has been, and will still be, of the greatest use and benefit to our unfortunate country. (Hear, hear.) It is one in which men of all sects, classes, professions, politics, and religions, may meet together, and go hand-in-hand, for the good of our common country, if they have any feeling of the Irishman in their breasts. (Hear, hear.) Therefore, I would say, that the country ought to feel proud of this Society, in which men of all shades of politics, creeds, and classes, are joined together, in a long pull, a strong pull, and a pull all together, for the benefit of the land we live in. (Hear, hear.) But this, I trust, it will be; and the admixture of classes and interests has been cordially increasing from the first year to the present; its usefulness is generally appreciated in the country, from one extent to the other, and, as a consequence, it is now well known both in England and Scotland. It is even under the patronage of her gracious Majesty the Queen. (Hear, hear.) I have, therefore, no fears for its success; and I am as sure that it will go on increasing in its usefulness from year to year. (Hear, hear.) Since I entered this room, I have been greatly delighted by the speeches delivered by the Earl of Erne and Mr. Adair, who have not only spoken with eloquence, but as becomes practical men. (Hear, hear.) I am a practical farmer myself, and was delighted to hear what they said about weeds. I would go further; and I would say that weeds are the worst curse, and pest, and poison, and ruin of a farm. Of all crops they grow best, and are the least profitable. (A laugh.) And I will further say, that of all the countries I have ever been in, I have never seen such flourishing crops of weeds as I have seen in Ireland. (A laugh.)

M. J. Anketell, Esq., J.P., Anketell Grove—No.

Sir R. Bateson—As far as my own farm is concerned, I take care there are no weeds in it, or as few as possible; but, if Mr. Anketell comes with me, I will shew him a full crop of weeds—a crop of ragweeds. (A laugh.) The other day I saw a ragweed, which went up as high as my breast; and if you go along the hedges and ditches, and the roadsides, you will find them covered with weeds. Now, as long as that system is carried on, and till we convince our farmers that the weeds must be extirpated before they can have the crops they ought, we never can get on with that degree of success which ought to be ours. How did they succeed in Belgium in making their soil so free of weeds, and so rich? Why, by constant hand-weeding, and the virtual eradication of those crops of weeds in which we have so long boasted. (A laugh.) Before we could grow green crops, or, indeed, any crops, we must remove the weeds; and, therefore, he hoped that the farmers would turn their most anxious attention to a subject of so vital importance in good farming. (Hear, hear.) A friend near him reminded him of the loss sustained from letting liquid manure be scattered about. That ought also to be attended to. Now, I can only say, with regard to this Society, that it is well known that I was one of the first in this room who suggested that the soil of the West was eminently calculated for the growth of flax; and I am glad to have to say to you now, that the experiment has been tried with the best results. (Hear, hear.) And here I must mention the name of a most respectable and venerable gentleman who just left a chair near me, and who, in this severe time of the year, came here a journey from Cork—the Rev. Mr. Townsend, of Cork—to learn the modes of cultivation which we have practised, in order to teach them to the suffering poor of his parish. Indeed, such a good, benevolent man deserves the thanks, not alone of this Society, but of every man in Ireland. (Hear, hear.)

Now, Mr. Chairman, at the beginning I said I would not make a speech —(a laugh)—indeed, I did not intend to say a word. But, I must now say, I perfectly agree with Mr. Adair, that the flax crop comes in most opportunely after the failure of the potato crop in Ireland. I fear that that disease is not over yet; and, consequently, the necessity of growing the flax crop more extensively has greater claims on our attention. Wheat crops will not do now. I tell you it is all moonshine to grow wheat in Ulster, or to expect that wheat crops will pay, with the prices which are now given. (Hear, hear.) We will be completely put out by the imports of foreign wheat; and, besides getting bad prices for his wheat, the farmer also sustains the loss of his manure. Oats is the only reliable grain crop now. I would also support the Society, for another reason; and that is, that it is the means of keeping money in the country which otherwise would be sent out of it. I always thought absenteeism was the greatest ill of Ireland; and, as the less absenteeism we have the better, so I think the more money we hold among us the better. (Hear, hear.) If we could keep the large amount which is still swept out of the country for the purchase of seed—£300,000—it would be better spent among Irish people, on Irish land, and for Ireland's benefit. Such a sum as £300,000 had, this year, been saved, owing to our supply of home-saved seed; and we have that much more in the country, instead of sending it out of it. I say, if we were all come together, all sink our party politics, and unite together in such societies as this—if all of us who ought would come forward, the greatest benefit would accrue to Ireland and her people, for whose advantage we are bound to do all we can; and, if we do, in the end we will have no reason to regret the trouble or labour we have taken. (Hear, hear.) I have now to conclude; and I declare I did not intend to say a word—(a laugh)—but I could not help saying so much; and I now beg to move the committee and officers for the ensuing year.

Mr. MacAdam having read the list,

Matthew J. Anketell, Esq., D.L., J.P., Anketell-Grove, rose to second the next resolution. He said—After the eloquent speech you have just heard, I have only to make a very few observations. In the first place, I would say that Sir R. Bateson has not a weed in his farm. (A laugh.)

Chairman (smiling)—I saw some the other day.

Mr. Anketell—When I said "no," I feared Sir R. Bateson got angry with me; and therefore I say now, he has no weeds at all. (A laugh.) There is one matter to which I think it right to call your attention at this meeting. I think the landlords ought to come forward generally, and advance seed to the tenants who require it. (Hear, hear.) I know that, in many parts of Ulster, there are tenants so impoverished, that they cannot procure seed; and it is the duty of landlords to advance seed for them. Besides, even if they had the means of purchasing the seed for themselves, they are not the best judges of the proper quality—(hear, hear)—and they generally confine their purchases to such stocks as are kept at huxters'. (Hear, hear.) There is the saying in reference to cookery—"First catch your hare, and then cook it;" and I would say, with regard to flax-growing—"First procure the proper seed, and then grow it." (Hear, hear.) I know, of my own knowledge, that it is highly to the advantage of the landlord to advance seed to his tenants; and I think I may safely refer to Lord Rossmore, and Sir James Stronge, and Major Humphreys, to bear me out in that view, from their own experience. [Lord Rossmore, Sir James Stronge, and Major Humphreys, nodded assent; and the Chairman and the Earl of Erne were understood to coincide with them.] I might also refer to Mr. Conolly, M.P. for Donegal, who advanced a large quantity of seed for his tenantry. I would say for myself (and I hope these gentlemen can say for themselves), that I never lost a farthing by having advanced seed. [The gentlemen above named again nodded assent.] The debt for the seed was considered a most honourable one, by the tenants; and they had a saying among themselves, that a man must be a great blackguard who would not pay for his seed. I may mention a circumstance about Mr. Conolly; for I do not think I am not at liberty to do so. It is this:—£1,500 were advanced by him to his tenantry in the purchase of seed for them—(loud cries of "Hear")—and it was paid every shilling, with the most honourable fidelity. I think Mr. Conolly's example is most valuable, also, in regard to scutch-mills. There is a great difficulty experienced on this point. There is a great want of them; and that want can only be supplied by the landlords assisting to establish them. Mr. Conolly also gave a free site for a spinning-mill; and, therefore, a manufacturer came forward to establish one, which will be of the greatest convenience and profit to the neighbouring localities. (Hear, hear.) With these remarks, and with the strongest sympathy in what Sir Robert Bateson said with regard to weeds, I beg to conclude, by seconding the motion.

The CHAIRMAN rose to put the motion, when,

Mr. MACADAM said—As reference had been made to the subject of providing good seed, he had received a very important letter from Messrs. J. N. Russell & Sons, Limerick, which he would read:—

"*Limerick, 25th November*, 1851.

"DEAR SIR,—We forward you, by rail, a parcel, containing some samples of our flax straw, with seed, of this year's growth; also, some of our scutched, from steeped flax (under Schenck), of last year. We likewise send you samples of both this and last year's seed.

"We regret to say, that the flax grown in this neighbourhood does not shew the improvement we were led to expect. The cause is clearly attributable to the want of care in its cultivation, as, also, the indifference as to the selection of good seed, in preference to cheap, inferior stuff. But, still, we do not despair, but shall redouble our exertions to force the growers to see their interest in producing a crop equal to what is generally grown in your district.

"We did all we could to facilitate the growth from best seed, having imported direct a large quantity of finest Riga; but, so blind were the great majority of growers, that, for the saving of a few shillings outlay, they made choice of any seed, provided the price was low.

"But we expect we have convinced, by ocular demonstration, *the folly of such ideal saving*, as the produce from bad seed is so markedly deficient in both quality and quantity.

"As far as we can calculate, there has been five times the quantity grown this year over last; we having already received into our concerns over 600 tons, and there still remains a large quantity in farmers' hands.

"Besides, new steeping concerns have been opened in Nenagh, Roscrea, and Clonmel, also another in Limerick. Those concerns have, of course, received a considerable quantity of the produce of seed sold by us, and the sellers of cheap stuff in this city.

"We are increasing our concerns, and putting up eight additional vats, sheds, drying-houses, &c., also six additional scutching-stands, as we are determined to place ourselves in a position to be able to receive such quantities as the growers may find it their interest to produce, thus preventing any complaint of want of a market.

"We have much pleasure in bearing testimony to the good conduct of your practical instructor, Mr. Orr, who has spared himself no trouble in following out your directions, and by endeavouring to get the farmers to adopt a proper mode of cultivation.

"This we assure you is no easy task in this part of the country; still, we are satisfied that, by perseverance, Mr. Orr will succeed.

"We beg to take this opportunity of thanking the members of your society, for the noble efforts they have made to ameliorate the condition of our country, by stimulating the growth of a crop that must eventually lead to the development of our resources.—We remain, dear Sir, your very obedient servants,

"J. N. Russell & Sons."

The Chairman then put the resolution from the chair, and it was carried.

The Chairman then said—I believe there are other resolutions to be proposed; but before we go to them, I would beg to say, that though I do not intend to go round with the begging-box—(a laugh)—I see some gentlemen in this room who may recollect what Lord Erne said about aiding this Society with their subscriptions; and as they are not members of our Society, I trust they will join us. I can assure them that they will find Mr. MacAdam here most ready to listen to any representations they may have to make to him on that score. (Loud laughter.)

John Sharman Crawford, Esq., J.P., Crawfordsburn, then rose, and said he understood they had now come to the end of the resolutions upon the chairman's list; but there was one resolution which he thought ought to have been included in the list given to the chairman—that was a vote of thanks to their able secretary. He (Mr. Crawford) could very well understand why such a resolution was not placed on the list, as the resolutions, together with the lucid report, had been drawn out by Mr. MacAdam himself; and, therefore, he was too modest to write the praise of himself. He (Mr. Crawford) spoke thus from his knowledge of the careful, painstaking, and judicious manner in which Mr. MacAdam had conducted the affairs of the Society hitherto. (Hear, hear.) He brought to the discharge of all his duties an amount of assiduity, ability, and unremitting attention which had been highly beneficial to the Society; and, therefore, he deserved their best thanks. (Hear, hear.) Mr. Crawford then moved the thanks of the meeting to Mr. MacAdam, amid general cries of "Hear, hear."

The Rev. **Fletcher Blakely** said he seconded the resolution with the greatest pleasure.

The **Chairman** expressed his entire concurrence in it, and then put the motion; and it was passed unanimously.

Mr. **MacAdam** rose and said, that he felt grateful for the kind, though not quite unexpected reference, which had been made to his services. Not unexpected, since his friend, Mr. Mulholland, had told him that he meant to bring it forward. But he had said, in reply, that he conceived such a compliment quite unnecessary as, in the first place, he was in duty bound to do his best in carrying out the Society's objects, not only from the official position which he held, but also because he felt that these objects must tend to the advancement and prosperity of Ireland. He again thanked the noble chairman and the meeting for the manner in which they had passed this vote of thanks.

The regular business of the meeting being now concluded,

The Very Rev. Dean **Stannus**, Lisburn, moved that the Marquis of Downshire do leave the chair, and that the Earl of Erne do take it.

The Earl of Erne having taken the chair,

Dean **Stannus** moved a vote of thanks to the Marquis of Downshire, both as Chairman that day, and as President of the Society, in which he had taken the deepest interest.

Sir J. M. **Stronge** seconded the motion, which passed by acclamation.

The Marquis of **Downshire** briefly returned thanks, and the proceedings terminated.

Up to the close of the meeting, there was scarcely any diminution in the numbers who assembled at the opening. The proceedings were all characterised by marked interest; and several subscriptions were received by the Secretary, both from existing and new members.

The following letter, from Mr. Conolly, M.P., was received after the meeting:—

"*Castle Pollard, Nov.* 27, 1851.

"**My Dear Sir,**—I am much obliged by your kind attention in advising me of your ensuing meeting; but, as I only returned to this country from a business tour in Scotland on last night, I hope you will excuse my absence from your meeting on this occasion.

"I hope, however, another year, to have the pleasure of attending; and I shall accept, with much satisfaction, the honour of personally aiding the progress of your Society in the capacity of a vice-president, which your Committee are so kind as to offer to me.

"Our flax crop in Donegal has, under the excellent superintendence of your instructors, quite realized our expectations; and we expect, from the completion of two first-rate scutch mills, and the establishment of a large concern for spinning yarn, to enter into the flax business, in all its branches, on a large scale, in the ensuing year.

"With many thanks for your invariable kindness and attention, believe me, dear Sir, yours, truly,

"THOMAS CONOLLY.

"J. MacAdam, jun., Esq.,
&c., &c., &c."

RESOLUTIONS.

At the Eleventh Annual General Meeting, held in the Society's Rooms, Commercial Buildings, Belfast, on Friday, 28th November, 1851,

The Most Noble the Marquis of DOWNSHIRE, President of the Society, in the Chair,

the Annual Report of the Committee and Statement of Accounts having been read, the following resolutions were unanimously agreed to:—

Moved by the Right Honourable the Earl of Erne; seconded by Major Humphreys, J.P., Strabane; and resolved—

1. "That the Annual Report and Statement of Accounts now read be received and adopted, and that they be printed for circulation, with such other information as may appear desirable to the Committee."

Moved by Lord Rossmore; seconded by S. K. Mulholland, Esq., J.P., Eglantine, and resolved—

2. "That the constant care with which the Lord Lieutenant has endeavoured to second this Society's exertions calls for a renewed expression of thanks to his Excellency."

Moved by Sir J. M. Stronge, Bart., Tynan Abbey; seconded by John Temple Reilly, Esq., D.L., Scarvagh House; and resolved—

3. "That the instruction of flax-growers in the proper system of cultivating that crop is indispensable to their success, and that, therefore, the grants made through the Society, on the recommendation of the Lord Lieutenant, for the instruction of the Southern and Western districts, have been of the greatest importance to those localities; and it is the opinion of this meeting, that it is a most judicious mode of applying the fund from which these sums were derived."

Moved by A. Shafto Adair, Esq., M.P.; seconded by Thomas Greg, Esq., J.P., Ballymenoch; and resolved—

4. "That the extended culture of flax appears, at the present time, to offer one of the most important means of improving the agriculture and manufactures of Ireland; that this meeting regards, with much satisfaction, the progress which has already been made, and urges on the Committee the continuance of their efforts towards so very desirable an object."

Moved by the Right Rev. the Lord Bishop of Down; seconded by R. J. Tennent, Esq., M.P.; and resolved—

5. "That the thanks of the meeting be given to the Committee, for their untiring and impartial exertions in carrying out the Society's views."

Moved by Sir R. Bateson, Bart., Belvoir Park; seconded by Matthew J. Anketell, Esq., D.L., Anketell Grove; and resolved—

6. "That the following be the list of office-bearers of the Society, for the ensuing year:—*Patrons*—Her Most Gracious Majesty the Queen,

and H.R.H. Prince Albert. *Vice-Patron*—His Excellency the Earl of Clarendon, Lord Lieutenant of Ireland. *President*—The Marquis of Downshire. *Vice-Presidents*—The Marquis of Hertford, the Marquis of Waterford, the Earl of Roden, the Earl of Erne, the Earl of Caledon, the Earl of Ranfurley, Viscount Dungannon, Viscount Bernard, M.P., Lord Rossmore, Lord Monteagle, the Lord Bishop of Down, Sir R. A. O'Donnell, Bart., Sir J. M. Stronge, Bart., Sir R. Bateson, Bart., Sir W. Verner, Bart., M.P., Colonel A. Knox Gore, Lieutenant of County Sligo; Sir R. Kane, W. S. Crawford, M.P., A. Shafto Adair, M.P., R. J. Tennent, M.P., Thomas Conolly, M.P., the Very Rev. the Dean of Ross, Edmund M'Donnell, D.L., J.P. *Committee*—W. G. Andrews, J. B. Bankhead, the Rev. F. Blakely, John Borthwick, James Campbell, John Charters, John Sharman Crawford, William Dargan, Fitzherbert Filgate, George Greer, James Grimshaw, jun., S. G. Fenton, John Hancock, Professor Hodges, John Herdman, Andrew Mulholland, S. K. Mulholland, John M'Master, Robert M'Kibbin, M.D., Richard Niven, John Preston, J. Temple Reilly, Jonathan J. Richardson, C. M'G. Skinner, Wm. Valentine, and Richard Walker. *Auditors*—John Charters and James Campbell. *Secretary*—James MacAdam, jun. *Treasurers*—The Belfast Banking Company."

Moved by John Sharman Crawford, Esq., J.P., Crawfordsburn; seconded by the Rev. F. Blakely, Moneyrea; and resolved—

7. "That the thanks of this meeting be given to the Secretary of the Society, for his unremitting attention in managing its affairs."

(Signed),
DOWNSHIRE, Chairman.
JAMES MACADAM, Jun., Secretary.

On the motion of the Very Rev. the Dean of Ross, seconded by Sir J. M. Stronge, Bart.—the Marquis of Downshire having left the chair, and the Earl of Erne being called thereto—the thanks of the meeting were returned to the Noble Marquis, for his very proper conduct in the Chair, and for his attention to the interests of the Society, as its President.

(Signed),
ERNE, Chairman.
JAMES MACADAM, Jun., Secretary.

APPENDIX.

DIRECTIONS
FOR THE
PROPER MANAGEMENT OF THE FLAX CROP,
COMPILED BY THE COMMITTEE
OF THE
ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

THE following directions have been carefully arranged from the mass of information obtained by the Society and their agriculturists, during their eleven years' experience in the improved system of management :—

SOIL AND ROTATION.

By attention and careful cultivation, good flax may be grown on various soils; but some are much better adapted for it than others. The best is a sound, dry, deep loam, with a clay subsoil. It is very desirable that the land should be properly drained and subsoiled; as, when it is saturated with either underground or surface water, good flax cannot be expected.

Without method, there cannot be success—different soils require a difference of rotation. In the best soils of Flanders, flax is grown in the third year of a seven-course rotation, or the fifth year of a ten-course rotation.

It is not considered generally advisable to grow flax more frequently than once in ten years: not because it exhausts the land more than any other crops, but because good *flax* cannot be had, at short intervals, on the same soil.* In Belgium, it invariably follows a corn crop—generally oats ; and in this country, where oats is such a usual crop, the same system might be profitably pursued : but it must be understood, that it is only after oats following a green crop or old lea, and never after two or three succeeding crops of oats, which bad practice still prevails in some districts. It is a very general error among farmers, to consider it necessary that flax should follow a potato crop. Except on very poor soils, a better crop will be produced after grain, and the double benefit of the grain and flax secured. If old lea be broken up, and potatoes planted, followed by a grain crop, a very fine crop of flax may be obtained in the ensuing year.

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* The following rotation, which would bring flax once in ten years, has been proposed:—First year, potatoes; second, barley, laid down with grasses; third year, cut for soiling; fourth year, pasture; fifth year, flax; or the one-half might be better in flax, the other in oats, so that, with the return of the rotation, which would be in five years, the flax could be put on the ground which, in the last rotatory course, was under corn, throwing a range of ten years between the flax crops coming into the same ground.

A gentleman of much practical knowledge recommends the following as being the most profitable :—1. Oats after the grass and clover. 2. Flax pulled in August; then ploughed and harrowed in with two cwt. guano and two cwt. gypsum; then sown with rape. 3. Potatoes or turnips, well manured. 4. Wheat, sown in Spring, with clover and ryegrass. 5. Hay and clover. 6. Grazing. 7. Oats. 8. Flax and Winter vetches; guano, as before mentioned. 9. Turnips, well manured. 10. Barley, sown with rye-grass and clover. 11. Clover and hay. 12. Grazing. 13. Oats.

PREPARATION OF THE SOIL.

One of the points of the greatest importance, in the culture of flax, is by thorough-draining, and by careful and repeated cleansing of the land from weeds, to place it in the finest, deepest, and cleanest state. This will make room for the roots to penetrate, which they will often do to a depth equal to one-half the length of the stem above ground.

After wheat, one ploughing may be sufficient, on light friable loam, but two are better ; and, on stiff soils, three are advisable—one immediately after harvest, across the ridges, and two in Spring, so as to be ready for sowing in the first or second week of April. Much will, of course, depend on the nature of the soil, and the knowledge and experience of the farmer. The land should be so drained and subsoiled, that it can be sown in flats, which will give more even and much better crops. Subsoiling should not be done at a less interval than two years prior to the flax crop. This gives the land time to consolidate. But, until the system of thorough-draining be general, it will be necessary, after oats, to plough early in Autumn, to the depth of six or eight inches. Throw the land into ridges, that it may receive the frost and air ; and make surface drains to carry off the rains of Winter. Plough again in Spring, three or four inches deep, so as to preserve the Winter surface for the roots of the flax. The Spring ploughing should be given some time before sowing, to allow any seeds of weeds in the land to vegetate, and the harrowing in of the flaxseed will kill them, and save a great deal of after weeding. Following the last harrowing, it is necessary to roll, to give an even surface and consolidate the land, breaking this up again with a short-toothed or seed harrow, before sowing, which should be up and down, not across the ridges or anglewise.

SOWING.

The seed best adapted for the generality of soils is Riga, although Dutch has been used in many districts of country, for a series of years, with perfect success. American seed does not generally suit well, as it is apt to produce a coarse, branchy stem. If used, it should be on deep, loamy soils. In buying seed, select it plump, shining, and heavy, and of the best brands, from a respectable merchant. Sift it clear of all the seeds of weeds, which will save a great deal of after trouble, when the crop is growing. This may be done by fanners, and through a wire sieve, twelve bars to the inch. Home-saved seed has produced such excellent crops, of late, that it is strongly recommended that every farmer should only sow, each year, as much foreign seed as would produce a sufficient quantity for his flax crop of the following season.* The thinner portion of the crop would be the best for this purpose, as, when flax grows thin, it produces much seed. This plan, besides the saving effected in the price of foreign sowing seed, would effectually secure the farmer from any danger of loss from fraudulently-made-up seed. It will be best, in most cases, to use the seed which is saved from this, in the following year, for feeding, or to sell it for the oil mills, although it often produces good crops. The proportion of seed may be stated at three and a-half imperial bushels to the Irish or Plantation acre; and so on, in proportion to the Scotch or Cunningham, and the English or Statute acre. It is better to sow too thick than too thin; as, with thick sowing, the stem grows tall and straight, with only one or two seed capsules at the top; and the fibre is found greatly superior, in fineness and length, to that produced from thin-sown flax, which grows coarse, and branches out, producing much seed, but a very inferior quality of fibre. The ground being pulverized and well cleaned, roll and sow. If it has been laid off without ridges, it should be marked off in divisions, eight to ten feet broad, in order to give an equable supply of seed. After sowing, cover it with a seed harrow, going twice over it—once up and down, and once across or anglewise; as this makes it more equally spread, and avoids the small drills made by the teeth of the harrow. Finish with the roller, which will leave the seed covered about an inch—the proper depth. The ridges should be very little raised in the centre, when the ground is ready for the seed, otherwise the crop will not ripen evenly; and, when land is properly drained, there should be no ridges. The sowing of clover and grass seeds along with the flax is not advised, when it can be conveniently avoided, as these plants always injure the root ends of the flax. But carrots may be sown, in suitable soils, in drills, so that the person pulling the flax may step over the rows, which may be afterwards hoed and cleaned, and should have some liquid manure. A stolen crop of rape or Winter vetches, or of turnips of the stone or Norfolk globe varieties, may be taken, after the flax is pulled. Rolling the ground after sowing is very advisable, care being taken not to roll when the ground is so wet that the earth adheres to the roller.

MANURE FOR THE FLAX CROP.

Recent chemical investigations have shewn that the fibre of flax does abstract from the soil certain matters, although not in so large a proportion as several other commonly cultivated crops. To supply to the soil all the matters which the entire plant requires, so as to leave the land in the same state of fertility as before, the following compound has been proposed, by Professor Hodges, as a manure, which may be sown broadcast on the land, prior to the last harrowing before sowing the flaxseed:—

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* The produce of seed averages about 12 bushels the Statute acre, so that the seed saved off one Statute acre would sow about five.

FOR A STATUTE ACRE OF LAND.		s.	d.
Muriate of Potash, 30lbs., ...	cost about	2	6
Chloride of Sodium (common salt), 28lbs., ...	"	0	3
Burned Gypsum, powdered, 34lbs., ...	"	0	6
Bone dust, 54lbs., ...	"	3	3
Sulphate of Magnesia (Epsom salts), 56lbs.,... ...	"	4	0
		10	6

WEEDING.

If care has been paid to cleaning the seed and the soil, few weeds will appear; but if there be any, they must be carefully pulled. It is done in Belgium by women and children, who, with coarse cloths round their knees, creep along on all-fours. This injures the young plant less than walking over it (which, if done, should be by persons whose shoes are not filled with nails). They should work, also, facing the wind, so that the plants laid flat by the pressure may be blown up again, or thus be assisted to regain their upright position. The tender plant, pressed one way, soon recovers; but, if twisted or flattened by careless weeders, it seldom rises again.

PULLING.

The time when flax should be pulled is a point of much nicety to determine. The fibre is in the best state before the seed is quite ripe. If pulled too soon, although the fibre is fine, the great waste in scutching and hackling renders it unprofitable; and, if pulled too late, the additional weight does not compensate for the coarseness of the fibre. It may be stated, that the best time for pulling is, when the seeds are beginning to change from a green to a pale brown colour, and the stalk to become yellow, for about two-thirds of its height from the ground. When any of the crop is lying, and suffering from wet, it should be pulled as soon as possible, and kept by itself. So long as the ground is undrained, and imperfectly levelled before sowing, the flax will be found of different lengths. In such cases, pull each length separately, and steep in separate pools, or keep it separate in the same pool. Where there is much second growth, the flax should be caught by the puller just underneath the bolls, which will leave the short stalks behind. If the latter be few, it is best not to pull them at all, as the loss from mixture and discoloration by weeds would counterbalance the profit. If the ground has been thorough-drained, and laid out evenly, the flax will be all of the same length. It is most essential to take time and care to keep the flax even, like a brush, at the root ends. This increases the value to the spinner, and, of course, to the grower, who will be amply repaid, by an additional price, for his extra trouble. Let the handfuls of pulled flax be laid across each other diagonally, to be ready for the

RIPPLING,

Which should be carried on at the same time, and in the same field, with the pulling. If the only advantage to be derived from rippling was the comparative ease with which rippled flax is handled, the practice ought always to be adopted; but, besides this, the seed is a most valuable part of the crop, being worth, if sold for the oil mill, £3 per acre, and if used for feeding stock of all kinds, at least £4 per acre. The apparatus is very simple. The ripple consists of a row of iron teeth screwed into a block of wood. This can be procured in Belfast, or may be made by any handy blacksmith.* It is to be taken to the field, where the flax is being pulled, and screwed down to the centre of a nine-feet plank, resting on two stools. The ripplers may either stand or sit astride at opposite ends. They should be at such a distance from the comb, as to permit of their striking it properly and alternately. A winnowing-sheet must be placed under them, to receive the bolls as they are rippled off; and then they are ready to receive the flax just pulled, the handfuls being placed diagonally, and bound up in a sheaf. The sheaf is laid down at the right hand of the rippler, and untied. He takes a handful with one hand, about six inches from the root, and a little nearer the top, with the other. He spreads the top of the handful like a fan, draws the one-half of it through the comb, and the other half past the side; and, by a half-turn of the wrist, the same operation is repeated with the rest of the bunch. Some, however, prefer rippling without turning the hand, giving the flax one or two pulls through, according to the quantity of bolls. The flax can often be rippled, without being passed more than once through the comb. He then lays the handfuls down at his left side, *each handful* crossing the other, when the sheaf shall be carefully tied up and removed. The object of crossing the handfuls so carefully, after rippling, when tying up the beets for the steep, is, that they will part freely from each other, when they are taken to spread out on the grass, and not interlock, and be put out of their even order, as would otherwise be the case. If the weather be dry, the bolls should be kept in the field, spread on winnow-cloths, or other contrivance for drying; and, if turned from time to time, they will win. Passing the bolls first through a coarse riddle, and afterwards through fanners, to remove straws and leaves, will facilitate the drying. If the weather be moist, they should be taken in-doors, and spread out thinly and evenly on a barn floor, or on a loft, leaving windows and doors open, to allow a thorough current of air, and turned twice a-day. When nearly dry, they may be taken to a corn kiln (taking care not to raise it above Summer heat), and carefully turned, until no moisture remains. By the above plan of *slow* drying, the seed has time to imbibe all the juices that remain in the husk, and to become perfectly ripe. If it be taken at once from the field, and dried *hurriedly* on the kiln, these juices will be burned up, and the seed will become shrivelled and parched, little nutritious matter remaining. In fine seasons, the bolls should always be dried in the open air, the seed thrashed out, and the heaviest and plumpest used for sowing or crushing. The light seeds and chaff form most wholesome and nutritious feeding for cattle. Flax ought not to be allowed to stand in the field, if possible, even the second day; it should be rippled as soon as pulled, and carried to the water as soon as possible, that it may not harden.

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* The best ripples are made of half-inch square rods of iron, placed with the angles of iron next the ripplers, 3-16ths of an inch asunder at the bottom, half-an-inch at the top, and 18 inches long, to allow a sufficient spring, and save much breaking of flax. The points should begin to taper 3 inches from the top.

WATERING.

This process requires the greatest care and attention. River water is the best. If spring water has to be used, let the pond be filled some weeks, or months, if possible, before the flax is put in, that the sun and air may soften the water. That containing iron or other mineral substances should never be used. If river water can be had, it need not be let into the pond sooner than the day before the flax is to be steeped. The best size of a steep-pool is 12 to 18 feet broad, and 3½ to 4 feet deep. Place the flax loosely in the pool, in one layer, somewhat sloped, and in regular rows, with the root end underneath; the tie of each row of sheaves to reach the roots of the previous one; cover with moss sods, or tough old lea sods, cut thin, laid perfectly close, the sheer of each fitted to the other. Before putting on the sods, a layer of rushes or ragweeds is recommended to be placed on the flax, especially in new ponds. As sods are not always at hand, a light covering of straw may do, with stones laid on it, so as to keep the flax just under the water; and as the fermentation proceeds, additional weights should be laid on—to be removed as soon as the fermentation ceases, so as not to sink the flax too much in the pool. Thus covered, it never sinks to the bottom, nor is affected by air or light. A small stream of water, allowed to run through a pool, has been found to improve its colour. In this case, if the pools are in a line, the stream should be conducted along the one side, and run into each pool separately, and the water of each pool run off, along the opposite side, in a similar manner. It will be sufficiently steeped, in an average time, from eight to fourteen days, according to the heat of the weather and the nature of the water. Every grower should learn to know when the flax has had enough of the water, as a few hours too much may injure it. It is, however, much more frequently *under*-watered than *over*-watered. The best test is the following:—Try some stalks of average thickness, by breaking the *shove*, or woody part, in two places, about six or eight inches apart, at the middle of the stalk; catch the broken bit of wood, and if it *will pull freely out, downwards, for that length, without breaking or tearing the fibre, and with none of the fibre adhering to it,* it is ready to take out. Make this trial every six hours, after fermentation subsides, for sometimes the change is rapid. Never lift the flax roughly from the pool, with forks or grapes, but have it carefully handed out on the bank, by men standing in the water. It is advantageous to let the flax drain twelve to twenty-four hours, after being taken from the pool, by placing the bundles on their root ends, close together, or on the flat, with the slope; but the heaps should not be too large, otherwise the flax will be injured by heating.

Within the last two years, a system of steeping has been introduced in Ireland, which is calculated ultimately to supersede the usual mode. It is effected by placing the flax, after pulling, drying, and beating off the seed (as in the Courtrai system) in vats filled with water, and heated by steam to an average temperature of 90 degrees. By this system the fibre is more uniformly watered, and not at all impaired in strength. The quality, where comparative trials have been made, has turned out superior to what is steeped in the ordinary way, except where growers have great skill in the management on the usual plan. This system is protected by patent, and authorisation to adopt it must be had from the patentee.*

SPREADING.

Select, when possible, clean, short, thick pasture ground for this operation; and mow down and remove any weeds that rise above the surface of the sward. Lay the flax evenly on the grass, and spread thin and very equally. If the directions under the head of rippling have been attended to, the handfuls will come readily asunder, without entangling. Turn it two or three times while on the grass (with a rod about eight feet in length, and an inch and a-half in diameter), that it may not become of different shades, by the unequal action of the sun, which is often the case, through inattention to this point. Turn it when there is a prospect of rain, that the flax may be beaten down a little, and thus prevented from being blown away.

LIFTING.

Six to eight days if the weather be showery, or ten to twelve if it be dry, should be sufficient on the grass. A good test of its being ready to lift is, to rub a few stalks from the top to the bottom; and, when the wood breaks easily, and separates from the fibre, leaving it sound, it has had enough of the grass. Also, when a large proportion of the stalks are perceived to form *a bow and string*, from the fibre contracting and separating from the woody stalk. But, the most certain way is, to prove a small quantity with the handbreak or in a flax mill. In lifting, keep the lengths straight and the ends even, otherwise great loss will occur in the rolling and scutching. Let it be set up to dry for a few hours, and afterwards tie it up in small bundles; and, if not taken soon to be scutched, it will be much improved by being put up in small stacks, loosely built, with stones or brambles in the bottom, to keep it dry, and allow free circulation of air. Stacks built on pillars would be the best.

DRYING,

By fire, is *always most pernicious*. If properly steeped and grassed, no such drying is necessary; but, to make it ready for breaking and scutching, exposure to the sun is sufficient. In some districts, it is put to dry *on kilns*, in a damp state, and is absolutely burned before it is dry, and the rich oily property of the flax is always greatly impaired. On this point, the Society can scarcely speak too strongly, as the flax is either destroyed, or rendered not worth one-half of what it would be, if properly dried.

BREAKING AND SCUTCHING,

If done by hand, should be on the Belgian system, which is less wasteful than that practised in Ireland. If by milling, the farmer will do well to select those mills in which the improved machinery has been introduced. The Society would also recommend, that the farmer should endeavour to have his flax scutched by a mill-owner who pays his men by the day, and not by the stone, even if it should cost him higher in proportion; the system of paying the scutchers by the stone rendering them more anxious to do a large quantity in the day than to produce a good yield from the straw.

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* By addressing a communication to Messrs. Bernard & Koch, Newport-Mayo, or Belfast, terms may be ascertained, with full particulars of the apparatus required.

THE COURTRAI SYSTEM.

This is the mode in which flax should be saved for steeping on Schenck's hot-water system. It requires to be very carefully done, as inattention will reduce the value of the straw, and yield inferior fibre. The flax stems should be put together in bunches, about one-half larger than a man can grasp in one hand, spread a little, and laid on the ground in rows after each puller; the bunches laid with tops and roots alternately, which prevents the seed-bolls from sticking to each other in lifting. It should be stooked as soon after pulling as possible, and never allowed to remain ever night unstooked, except in settled weather. The stooking should go on at the same time as the pulling, as, if flax is allowed to get rain while on the ground, its colour is injured. A well-trained stooker will put up the produce of a Statute acre, or more, in good order, in a day, with two boys or girls to hand him the bunches. The flax should be handed with the tops to the stooker. The handfuls, as pulled, are set up, resting against each other—the root ends spread well out, and the tops joining like the letter A. The stooks are made eight to ten feet long, and a short strap keeps the ends firm. The stooks should be very narrow on the top, and thinly put up, so that they may get the full benefit of the weather. In six or eight days, at most, after being pulled, the flax should be ready for tying up in sheaves of the size of corn-sheaves. It is then ricked, and allowed to stand in the field until the seed is dry enough for stacking. To build the rick, lay two poles parallel on the ground, about a foot asunder, with a strong upright pole at each end. The flax is then built, the length of a sheaf in thickness or breadth. The bottom poles should be laid North and South, so that the sun shall get at both sides of the rick during the day. In building, the sheaves should be laid tops and roots alternately, built seven to eight feet high, and finished on the top by laying a single row of sheaves lengthwise, or across the others, and then another row as before, but with the tops all the same way, which gives a slope to throw off rain, and finished by putting on the top a little straw, tied with a rope. In this way, if properly built, it will stand secure for months. It can be stacked at leisure, or put in a barn, the seed taken off during the Winter, and the flax steeped in the following May; or it may be kept stacked, without receiving any injury, for two or three years, or even longer.

MR. WARNES'S (OF TRIMINGHAM) SYSTEM OF BOX-FEEDING.

Summer.—Ryegrass and clover, or any other green crop, cut into chaff of about an inch long, with the addition of ground linseed made into compound. WINTER.—Seven-eighths straw—one-eighth hay, with turnip tops or wurzel leaves cut into chaff, with the addition of linseed as above. *To make the compound*, fill the furnace with water to within six inches, and, when boiling, strew by hand one-fifth of linseed meal to four-fifths of water, a boy stirring the meal in, till it is well mixed—(damp the fire); let the mucilage simmer about five or six minutes, when it will become a strong jelly. Into a large tub put about three bushels of the chaff, adding enough of the mucilage to wet it; mix and ram well down, then add more chaff, &c., mixing and ramming down every three baskets. The compound is then covered over, and in about two hours, the mucilage being absorbed by the chaff, may be given to the cattle. If it is wished to *push the cattle on*, sprinkle a small proportion of the meal of barley, or other corn, upon each layer of the chaff and mucilage, also Swedish turnips, carrots, or wurzel, cut small, may be added, to give the compound a flavour. Altogether, the above compound will be found, at the present juncture, extremely economical for *fattening*, rearing, or maintaining store stock. DIRECTIONS FOR FEEDING. SUMMER.—(*At five in the Morning and Three in the Afternoon.*)—Give each beast about half-a-bushel of the compound, feeding the remainder of the day with chaff. Water once a-day. WINTER.—(*Morning, Five o'clock.*)—Begin with half-a-peck of the compound to each beast; continue this food till the beasts are nearly satisfied. (*At Seven and Nine.*)—Feed with half-a-bushel of cut Swedish turnips to each, at twice. (*Eleven.*)—A feed of the compound. (*Afternoon, at One and Three.*)—As many Swedes as the beasts will eat, *a little at a time*. (*Six.*)—A good feed of compound, leaving for the night. The boxes or sheds in which the cattle are kept, must be sparingly littered twice a-day, and cleaned out when full. Food to be given a *little* at a time. UTENSILS.—An iron furnace, to hold forty gallons; an iron stirrer (like a small mashing stick); an iron bowl, with a handle; a linseed crusher—tub or stone cistern of about 100 gallons—wooden rammer; a bushel basket—chaff cutter—turnip cutter; a fork, with four flat prongs; a common bucket, with iron handle; a skip or box to hold about a peck; a bin, with partitions for linseed before and after crushing. In fixing the boiler, it should have a curb of wood, six inches deep, sloping back; this will prevent the mucilage boiling over. [For directions to make compound of grain, and other particulars, see Mr. Warnes's book, to be had of all booksellers.]

ABSTRACT OF THE EXTENT OF FLAX GROWN IN EACH COUNTY IN IRELAND, IN THE YEARS 1850 AND 1851.

Furnished to the Society through the Census Commissioners, by order of the Lord Lieutenant.

PROVINCES AND COUNTIES.		1850. Statute Acres.	1851. Statute Acres.	Increase in 1851. Stat. Acres.
ULSTER.	Antrim,	8,106	11,630	3,524
	Armagh,	9,623	13,121	3,498
	Cavan,	5,107	8,933	3,826
	Donegal,	14,169	20,955	6,786
	Down,	9,895	15,114	5,219
	Fermanagh,	1,283	2,808	1,525
	Londonderry,	13,445	18,361	4,916
	Monaghan,	10,157	13,779	3,622
	Tyrone,	13,280	19,025	5,745
	Total,	85,065	123,726	38,661
LEINSTER.	Carlow,	58	120	62
	Dublin,	21	21	...
	Kildare,	23	48	25
	Kilkenny,	32	225	193
	King's County,	79	259	180
	Longford,	318	790	472
	Louth,	388	1,439	1,051
	Meath,	343	924	581
	Queen's County,	131	171	40
	Westmeath,	207	465	258
	Wexford,	193	368	175
	Wicklow,	8	32	24
	Total,	1,061	4,862	3,061
MUNSTER.	Clare,	506	1,000	494
	Cork,	853	2,698	1,845
	Kerry,	300	654	354
	Limerick,	225	619	394
	Tipperary,	187	603	416
	Waterford,	23	259	236
	Total,	2,094	5,833	3,739
CONNAUGHT.	Galway,	211	607	396
	Leitrim,	367	904	537
	Mayo,	939	1,450	511
	Roscommon,	200	507	307
	Sligo,	363	730	367
	Total,	2,080	4,198	2,118
	General total,	91,040	138,619	47,579

ABSTRACT OF THE EXTENT OF FLAX GROWN IN EACH PROVINCE IN IRELAND, DURING THE YEARS 1848, 1849, 1850, 1851.

PROVINCES.	1848. Statute Acres.	1849. Statute Acres.	1850. Statute Acres.	1851. Statute Acres.	Increase per cent. between the years 1850, 1851.
Ulster,	49,549	57,651	85,065	123,726	45
Leinster,	1,239	741	1,801	4,862	170
Munster,	1,249	937	2,094	5,833	179
Connaught,	1,826	985	2,080	4,198	102
	53,863	60,314	91,040	138,619	52

N.B—The extent of flax grown in 1851 has been hastily compiled from the returns just received from the enumerators, which may be hereafter altered in some degree upon revision.

(Signed), WILLIAM DONNELLY, Registrar General.

Census Office, Henrietta-street, Dublin.

SCHENCK'S PATENT STEEPING SYSTEM.

The following report on the experiments, made with a view to test the quality of the patent-steeped flax for manufacture, was submitted to the 10th annual meeting of the society, 29th November, 1850 :—

"TO THE COMMITTEE OF THE ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

"Your Sub-Committee, on the 31st of July last, made a report on the results of their investigations up to that period. They do not consider it necessary in this, their final report, to copy that document at length, but will simply embody the information it contained in the more extended matter which they are now able to lay before you. Though the Committee, from their many opportunities of inquiring into the efficacy and advantage of the late Mr. Schenck's process, since that gentleman first brought it before the notice of the Society, in 1847, were quite satisfied about it, they suspended their opinion until facts were brought forward on every point; and your Sub-Committee, in handing in the present report on the objections raised by some parties, will be able to convince you that they do not state a rashly-formed opinion of their own, but rather publish the results of experiments conducted by disinterested and competent parties.

"As much of the advantage of flax culture depends on being able to economise, to the greatest extent, the crop after being grown, and to reduce the grower's trouble and hazard, whilst ensuring the greatest value, your Sub-Committee hope that their report will prove Schenck's system to realise these desirable points, and will shew that, if proper care be given to the process, something as near certainty will be attained as could be expected, and a much more steady return than by the old, slovenly, and uncertain process of watering, conducted by persons often ignorant of the commonest chemical principles, and generally attended with the loss of the seed—a most valuable part of the crop.

"The doubts raised as to Schenck's process were—1st. That the yield of fibre would be less than by the ordinary mode of steeping ; 2d. That flax so prepared would be weakened; and, 3d. That the linen made from it would not bleach properly.

"As respects the first objection, your Sub-Committee are of opinion that, either by the common process or by Schenck's, the yield of fibre will be lessened if the fermentation is allowed to go too far. The uniformity of temperature ensured by the latter would induce the belief that the yield of fibre should be increased. This is borne out by two experiments. In the one conducted at Lisburn, by Mr. Davison, in 1847, 112lbs. of flax straw, after steeping and drying in the ordinary way, gave 20lbs. of scutched fibre; and 112lbs., steeped by Schenck's process and dried, gave 24lbs. In another, tried this year, at Drimoleague, County Cork, from 112lbs. of straw, the old process gave 14lbs. 5ozs., and Schenck's, 17lbs. 11¾ozs. The increased yield in the first experiment was 20 per cent., and, in the latter, 23½ per cent., in favour of Schenck's method. As respects the quality of the fibre, the result was equally in favour of the latter system. In the first experiment, the flax steeped in the ordinary way spun to 96 lea yarn, and that by Schenck's system to 101 lea. In the second, the ordinary gave 60 lea, and Schenck's 70. A further experiment was communicated by Messrs. Marshall & Co., of Leeds, some flax straw grown in Holland being the material employed. What was steeped in Holland, in the usual way, gave 61lbs. 1oz., hackled, to the 112lbs. of fibre; and two lots of the same straw, steeped by Schenck's system, in two different concerns, gave, respectively, 62lbs. 4oz. and 64lbs. per cwt.; the value of the fibre, per acre, being, of the common steeped, £9 8s, and of the patent steeped, averaging £10 12s.

"With respect to the second objection, that the flax might be weakened, the same remark may be made, that fermentation, conducted on a systematic and scientific plan, was not likely to weaken the fibre more than the same amount by an uncertain process. And, although the fibre might often be made *stronger* by the old plan, when the steeping was not carried far enough; yet, on the other hand, it was frequently over-steeped, and, consequently, *weakened*. In addition to the favourable report of spinners who had produced yarn from Schenck's flax, of fair strength, the following results of experiments were laid before them:—Several samples of fibre, of full strength, steeped on the patent system, in different places; samples of threads from Messrs. Marshall & Co., of Leeds, unbleached, bleached, and dyed, made from the patent steeped flax to which reference has been made, all being of good, strong quality; a sample of 140's weft yarn, from Messrs. S. K. Mulholland & Hinds; and a sample of boiled yarn, for heavy linens, from Messrs. Dunbar, M'Master, & Co., of Gilford. All these were considered of fair average strength. It is evident to your Committee that flax steeped by the patent process can be made either strong or weak, it being in the power of the operator, by increasing or decreasing the time of steeping, or by raising or lowering the temperature of the water, to make whatever quality suited the market, or would best remunerate him. They submit, that *strength* is not what will be most profitable to the grower, but that *fineness of quality, with softness*, will often remunerate him much better, and his interest will be to produce what is most in demand and highest priced. At this point the duty of the Society ends; whatever will best remunerate the *grower* being what it is their duty to point out, and it is for the *spinner* to choose strong or weak, as he may require it for different customers.

"As to the third objection, that the patent steeped flax might not bleach well, the samples of yarn, thread, lawn, and linen, produced at the present meeting, are sufficient evidence of its groundlessness. The following letter from an eminent bleaching firm is still further satisfactory:—

'*Lisburn, 28th August*, 1850.

'MESSRS. S. K. MULHOLLAND & HINDS,

'DEAR SIRS,—We have the pleasure to return, finished, the two pieces of linen made from flax steeped on Schenck's plan, which you sent us to bleach; and, during the process, we found the advantage more decided than with the lighter fabrics you sent us, some time ago. These, with other opportunities of judging, have caused us to conclude that the general introduction of Schenck's patent process would be a step in the right direction, unless objections can be substantiated unconnected with the bleaching department of the linen trade.—Yours, very truly,

'RICHARDSON & Co.'

"Thus your Sub-Committee believe that all rational objections have been satisfactorily met. The general question having now been put in a favourable position, it rests with others to pursue the details more minutely; and it is hoped that they will be careful to note and make known both improvements and sources of failure, if any arise, so that the public may benefit by the results of their experience."

Dr. Hodges communicated to the meeting the following result of trials made near Berlin on Schenck's process:—

"In connexion with the questions which at present occupy the attention of the Society with respect to the economy of the various methods of steeping now followed in this country, I have much pleasure in being able to bring before the meeting the results of some experiments lately made in Germany, for the purpose of ascertaining the comparative value of the old and new methods. These experiments are arranged in a tabular form, and will, I think, form an interesting addition to your report:—

SCHENCK'S STEAM RETTING.

No. of sample.	Duration of Steeping.	Loss.	Produce from 100lbs. of steeped flax.	Produce from 100lbs. of unsteeped flax.
1	60 hours.	22 per cent.	17·54-100lbs.	14lbs.
2	60	12	14·31	12·59
3	96 & 60	26⅜	17·07	12·57
4	157	26	15·33	11·34
5	157 & 60	26	12·12	8·96
6	72	25	15·34	11·50
7	258	23	17·38	13·38
8	70½	8⅔	13·43	
9	68	14·64	14·45	
10	68	10	17·09	

COLD WATER RETTING.

No. of sample.	Duration of steeping.	Loss.	Produce from 100lbs. of steeped flax.	Produce from 100lbs. of unsteeped flax.
1	480 hours.	14½ per cent.	14·33-100lbs.	12·43lbs.
2	480	25	9	6·75
3				
4	552	25	14·81	11·10
5	768	25	9·50	7·12
6	648	25	12·75	9·56
7	888	25	16·43	12·32
8	300	unknown.	12·71	

It was also found that, on an average, 1,200lbs. of flax straw afforded by the steam process 144lbs. of pure flax, and by the old method 118lbs. The experiments were ten in number, and were made with nine different kinds of flax. They give the duration of the steeping, the loss in steeping, and the produce of fibre both from fresh and steeped straw. They, therefore, convey precisely the kind of information at present required."

Further experiments on this mode of steeping, by Mr. W. G. Andrews, of Comber, are thus detailed :—

"TO THE COMMITTEE OF THE ROYAL BELFAST FLAX IMPROVEMENT SOCIETY.

"Having completed the treatment of the flax of which I undertook the management by the desire of your Society, and having observed, in a great measure, the mode which my experiments of last year seemed to indicate as the most successful, I now beg leave to submit to you the results.

The quantity operated upon was 14¾ cwt. of flax straw. It was divided into four portions, and steeped in large quantities of water similar to last year, 1,100 gallons being used in steeping 4 cwt. of flax straw. The temperature of the water was maintained as nearly as possible at 80 degrees. The length of time in the steep was, on the average of four lots, 74 hours. After steeping, each beet was set on its end for a few hours to firm, it was then spread on the grass for periods averaging thirteen days. After being taken from the grass, dry, the 14¾ cwts., before steeping, produced 11 cwt., and the yield of scutched flax was 237½lbs., with 73lbs. of tow. I herewith transmit to you the flax and tow in the four distinct parcels, to each of which is attached a label, with the number referring to the table prefixed to this report.

"I confidently expect that, after being subjected to the operations of hackling and spinning, this flax and tow will justify the opinion I formed last year, and still entertain, that steeping in tepid water and subsequent exposure for a time on the grass will be found, in all respects, the most conducive to produce and quality, as respects fineness, colour, and durability. I conceive it essential that the quantity of water should not be too limited, the quantity used in these experiments being, as I have stated, 1,100 gallons to 4 cwt. of flax. I think this mode of treatment nearly resembles the plan of second steeping which has been found successful in

Belgium, and of which I have read the description in Mr. Marshall's letter, and in the report of the last meeting of the Committee. Having been impressed with the idea that flax should be sown earlier in the Spring than has hitherto been practised in this country, I have this year commenced experiments, with a view to test the accuracy of that opinion; and the result of sowing so early as the beginning of March, and afterwards in the middle of that month, has this year been satisfactory.

"I propose repeating these experiments in subsequent years, as it might not be safe to depend on the experience of this single year, in which Spring frosts were less prevalent than usual; and I do not, therefore, venture decidedly to recommend this very early sowing, though I entertain strong expectations of favourable results from adopting it.

"William G. Andrews.

"*Comber*, 18*th September*, 1851."

No.	Steeped.	Temperature.	Time in steep.	Weight of straw before steeping.			Taken from the grass dry.			Produce.		Time on grass.
				Cwt.	qr.	lb.	Cwt.	qr.	lb.	Flax. Lbs.	Tow. Lbs.	
1	26th July.	80°	72 hrs.	4	0	0	3	0	0	63½	22	13 days.
2	30th July.	...	82 ...	4	0	0	3	0	0	61	19	16 ...
3	2d Aug.	...	71 ...	4	0	0	3	0	14	66	24	13 ...
4	5th Aug.	...	71 ...	2	3	0	1	3	14	47	8	10 ...

Twice steeping has been found advantageous, as will be seen by the following communication from Mr. A. Marshall, of Leeds :—

"Dear Sir,—We find that twice steeping very much improves the quality of the flax, and makes the colour more regular; and Mr. Pugh thinks the straw is cleaner, making less dust in the swingling operation, and that it is easier to swingle, which, very likely, arises from the straw being more evenly rated : for instance, if the flax at the bottom of the vat is less rated than that at the top, when you put it in for the second steep you can reverse the order in which the flax was laid in the first vat; or, if the centre of the beets is not so much done as the outside, you have the opportunity of turning the beets inside-out for the second steep.

"We have not made any experiment as to the strength of the once-rated and twice-rated flax.

"If the straw was soft and without much fibre, we should not think it worth while to rate it twice over.

"In reply to your inquiries in their order :—

"We aim at making no difference in the temperature between flax-rating the first time and flax-rating the second time. If the flax required six days' steeping, we should leave it in four days the first steep, and two days the second steep. We always use the same sort of water, whatever flax is in the steep. The water contains a proportion of, perhaps, one-third old steep water; but we very frequently use water containing a larger proportion; but, in all cases, the old steep water is let off into a reservoir before it is used again.

"The flax, between the steepings, is dried in *cappelles,* as at Courtrai, to avoid the expense of putting in holders, and because we do not aim at getting it thoroughly dried; and rain does not do it much harm when it is put up in this way.

"We have made an experiment or two of merely running the water off between the steepings, and filling again with water for the second steep, without taking the flax straw out at all; but have not arrived at any accurate result as yet. We have also tried drying the flax thoroughly, and stacking for two or three weeks between the ratings; but did not find this any improvement. The temperature of water is the same for both steeps.

"We find the plan of drying in holders much the best, and, in consequence, the system more regular; but it is necessary to have a stove for finishing off the drying in Winter and unfavourable weather; and I think the right arrangement for the fitting up of the stove is that adopted by some retteries in Ireland, where the stove is fitted up just like the drying-shed, only that the holders are closer together, and thus the flax straw remains in the holders until it is finished.

"For drying the flax in *cappelles,* or rickles, as we call them, we have short sticks, about three feet long, fixed in the ground, arranged in lines, and the flax is rickled round the sticks. The stick prevents the rickle being blown over; and it is easier for the hands to rickle the flax round these stakes than without them. We never lay out the flax to bleach. I suppose, at Courtrai, the plan of second-rating is found to render the bleaching unnecessary. We shall be glad to shew our rettery, at Patrington, to any one who is interested in the subject of flax management; and if, at any time, the Flax Society, or any other party in your neighbourhood, wishes to send a person to Patrington, to make some stay there, to learn our method of managing the rettery, we will give him every facility to do so. "ARTHUR MARSHALL."

An account of the mode of steeping twice, and much practised in Belgium, is thus given by Mr. Irwin, one of the Society's instructors:—

"It is generally known that, according to this system, flax is seldom steeped the season it is grown. However, to this general rule there are some exceptions. It would be unnecessary to lose time in describing how flax is saved at Courtrai, as in the Society's directions a correct statement is given.

"The celebrated river Lys is the great retting pond of Belgium. The flax, when taken to its banks, is tied up into bundles with rye-straw, each bundle consisting of two ordinary-sized sheaves, placed roots and points alternately. It is then packed into wooden frames 12 feet long by 6 broad, made of bars. A lining of straw is put around the flax inside the frame; when thus done, the frame, &c., is launched out into the river, and such weight applied as is sufficient to keep all under water. When once steeping is the intention, the term required in steep is from 10 to 12 days; and, when twice is intended, from 8 to 10 days the first time. When taken from steep the first time the shove will draw out in lengths of 3 or

4 inches for half up the stalk, the top part still adhering. The flax is then taken up and put standing perpendicularly on the bank, and left so for the night. The next day, if favourable, it is put up to dry in the usual way of *cappelles*. When perfectly dry (not partially) it is put into stack for a few weeks.

"This part of the process the manufacturers about think indispensable, in order to produce a first quality of fibre, their reasons for which are good—viz., that, as it is chiefly for the purpose of gaining strength, twice steeping is resorted to; if the flax was not all perfectly dried, such would not be the result; as, if any part was not dry, inequality would ensue. Stacking for some time, to allow of what they call 'coming,' gives a much finer fibre. Having gone through these operations, it is then put again into the steep, the course of management being the same as the first time, and the time required for second steeping is from 6 to 8 days. When taken up this time the shove will draw out in lengths of 6 or 8 inches the whole way from root to top. The process of drying is the same as before. Sometimes flax is spread out on the grass one day, and on the next turned, and then taken up—this is what is called 'minute-bleach.' About Courtrai the twice steeping and not bleaching, is the favourite mode at present, and it is said to be extending to other localities likewise. The Belgians are rather more particular, in many respects, than the Irish; as, by the former, it is considered unsafe to scutch flax either in hot weather or frost, for that, under such temperature, the fibre is comparatively brittle."

FLAX AFTER DIFFERENT ROOT CROPS.

THE following communication confirms the Society's opinion as to the disadvantage of growing flax after turnips, unless the land be specially manured for it :—

"*Elmfield, Gilford, Nov. 27th*, 1851.

"JAMES MACADAM, JUN., ESQ.

"DEAR SIR,—I am sorry that circumstances prevent me being able to attend the annual meeting of the Royal Flax Improvement Society to be held to-morrow; I, therefore, beg to furnish you with the results of some experiments I have made this year in growing flax on ground which had carried green crops the previous year—viz., carrots, turnips, and potatoes. The soil of the field I considered all equally good, and it was in a very high state of cultivation; indeed, I am inclined to think it was too rich for growing flax; but, being anxious to have the field laid down in good condition with permanent grasses, I was induced to sow flax in preference to wheat, oats, or any other grain crop.

49 square yards carrot-ground flax produced 78lbs. straw when rated and dry, which produced 8lbs. scutched flax, being about 50 stones per statute acre, valued at 8s 3d per stone of 16lbs., ...	£20 12 6
49 square yards potato-ground flax produced 64lbs. straw when rated and dry, which produced 7lbs. scutched flax, being about 43 stones per statute acre, valued at 9s per stone of 16lbs., ...	£19 7 0
49 square yards turnip-ground flax produced 50lbs. straw when rated and dry, which produced 5lbs. scutched flax, being about 31 stones per statute acre, valued at 7s 6d per stone of 16lbs., ...	£11 12 6

"I should state, that the reason I was induced to make these experiments was owing to the very marked difference in the appearance of the crop when growing; in fact, any one who saw the crop could tell, to the very drill, where the turnip, the carrot, and the potato ground each commenced and left off at.

"The seed was all the same—my own saving—and was superior to any foreign seed I have seen; was all sown on the same day, and got the same treatment of labour; the manure used the previous year, for raising the green crop, was all farm-yard.

"From the result of these experiments it would appear, that flax will not succeed well the following year after turnips, and that this root crop takes matters from the soil similar to what the flax plant does, and hence the necessity of analyzing the flax plant, and ascertaining what chemical manures are calculated to promote the growth of this valuable plant; and if possible, by this means, secure to the farmer as large a yield, per acre, after a crop of turnips, as he would have after either potatoes or carrots.*

"I fear you will consider I have gone too much into detail with my remarks; but trust you will excuse me. You are at liberty to make what use of them you think proper; and I remain, dear Sir, yours, very truly,

"JAMES DICKSON.

"N.B.—The flax was rated on the old system, and not on Schenck's."

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* The manure recommended for flax by Professor Hodges (see instructions, page 44) should always be applied when that crop is sown after turnips.

PROFITS OF FLAX SOLD IN THE STRAW.

As it has been stated by some persons who have grown flax in the South of Ireland, that the prices obtained for flax straw would not pay the grower, the following communications are given, at length, to shew, that where proper attention is given to the choice of soil and of seed, and to the details of cultivation, growers will have a fair remuneration. And it is to be observed, that, in all the instances now quoted, the cost of the operations has been much higher than it would have been in old flax-growing districts, which leads to the conclusion, that, with more experience in flax culture, the expenses will be much lessened, and the profit, consequently, increased:—

"I have read, with much attention and interest, the various statements respecting the flax crop of this season. Many of them I coincide with; but that coming from the Marquis of Ormonde I respectfully beg leave to differ from *in toto*, and confess it quite astonished me.

"Until this year I never had a rood of flax, though nearly forty years farming, on rather an extensive scale; and I must confess, had I not began to grow flax until after I had seen the Marquis's statement, I would have gone about it with great misgivings; and as, no doubt, others who have not tried for themselves may feel similarly, I think it right to give you my statement, which, I pledge myself, is incontrovertible. In doing so, I think better to begin with the history of the cropping of the ground on which the flax was grown.

"In 1845, I took this farm, on which the flax was sown last year, into my own hands, from the person who held it for more than twenty years upon a life lease, and need scarcely say it was not in the best of heart; but, on the contrary, everything it was capable of yielding was taken out of it; in fact, it was quite exhausted, extremely wet and dirty; at the same time naturally excellent land, though a stiff clay. I saw I had nothing for it but a large expenditure, and that immediately; so I commenced draining, in 1846. As stones were not to be had in my locality, I was obliged to import tiles, which I did, from Ayrshire, and brought over a practical working drainer from Mr. Smith, of Deanston, to superintend the work, which was done at a very heavy expense, but, I have reason to think, in the best manner. I then manured this ground extremely well with farm-yard, straw-yard, and stable dung, and I do not think any land could be better handled for a green crop. I commenced with turnips, mangel wurtzel, potatoes, and carrots; these crops were all good. This I followed with wheat, which was about an average crop—nearly all white wheat, and sown from October to February, as I removed my green crops.

"I ploughed in my wheat-stubble as early as possible; and, in the end of March following, I sowed barley with ryegrass and clover. I had 15 barrels of barley to the Irish acre, of excellent quality; and one of the best crops of clover I almost ever saw. The clover fed off with all kinds of cattle, beginning early in March with breeding ewes, all of which yeaned in this field; and my new-calved cows immediately after. I fed this land with a heavy stock on till Christmas. In January I ploughed the lea for oats, which I sowed the last week in February (Hopeton seed), and had, most assuredly, above twenty barrels to the Irish acre, of the best oats.

"Having now briefly glanced at the treatment this ground has undergone, on which I grew the flax, I will now come to the flax crop itself. The part of my farm before alluded to is one field called the Coolcullia, containing, of the ploughed ground, 18A. 0R. 27¾P., Irish plantation measure, which I sowed with Riga seed got from Messrs. Richardson & Co., of Drogheda, at 40s per barrel. I put one barrel to the Irish acre, and had sown all by the 21st of April. I took nearly all the stones off the surface of the field, after one ploughing and harrowing, which was all the tillage I gave the field since the oat-stubble was ploughed in. I then rolled the field quite flat, with a very heavy roller, before sowing. I then put on a light grass-harrow, and rolled again. I attended to the weeding most particularly, as long as the flax was not injured by going through it. I had it all pulled by women, girls, and boys, with bare feet; wages, sixpence per day.

"My calculation of the whole expense of this flax crop, per Irish acre, is as follows:—

Being at the end of my course, I can only put down, as a rent per Irish acre, per annum, ...	£2	2	0
Seed, one barrel of Riga, ...	2	0	0
Labour, per acre, ...	2	2	0
Weeding, per acre, ...	0	10	0
County cess and poor-rate, per acre, ...	0	4	0
Loss to my farm—which I consider a fair charge, having no return of offal to the farm generally, for want of straw—per acre, ...	1	10	0
	£8	8	0

"Having now shewn what the whole expense of the Irish acre is—namely, £8 8s—I will then shew you the produce. As before stated, the field on which the flax was grown contains 18A. 0R. 27¾P., Irish plantation measure (as vouched by the endorsed measurement, made by Mr. Robert Manning, of the Board of Works), which produced 77 tons 7 cwt. of flax straw, sold and delivered to Messrs. Hay, Brothers, of Dunleer, three and a-half Irish miles from the field, for which they paid me £270 cash, on delivery, or £3 10s per ton. I also enclose Messrs. Hay Brothers' certificate of the quantity delivered. You will now see, by this statement, and from the corroboration accompanying it, that there cannot be a shadow of doubt of its correctness, that the produce, per Irish acre, of flax, when properly cultivated, is over four tons, and not two and a-half tons, as stated by the Marquis of Ormonde; and, instead of a balance of £2 against the cost of production, I have had a balance of £6 9s per Irish acre in its favour, which I consider so satisfactory a result, that I am preparing nineteen Irish acres for sowing next season, all on oat-stubble, which I have already ploughed in, and was unusually particular in weeding the stubble, immediately after the oats was cut, as well as up to the time of ploughing; the four crops preceding this crop were precisely the same as that already stated.

"I may safely add, that my flax crop would have produced a greater weight had it been taken from me, by Messrs. Hay, Brothers, at the time it was well fit for delivery, and from the stock I delivered about one-sixth in that way; the remainder I was obliged to stack, as the works at Dunleer had not been quite completed, and they could not take in more than a certain quantity at a time. I beg to observe, that the 77 tons 7 cwt. were taken on seventy carts and drays, with single horses.

"I have heard various observations from practical farmers in this country, who, I am sorry to find, are much against flax cultivation. I have heard many say that flax, taking all the heavy expenses attending it, would not pay so well as either a crop of oats or barley. Now, this I do not think any argument. If I have proved satisfactorily by my statement, which I trust I have, that more than four tons an acre of excellent flax can be raised from land not fit for either oats or barley, I think that I at once do away with the observations alluded to. After five crops, as I have shewn I had prior to the flax crop, from one manuring, I would ask any farmer would he attempt a crop of oats or barley?

"In fact, my flax crop, this season, came in place of manuring the land.

"I trust this statement may have a good effect on those who are deterred, by erroneous statements, from engaging in a branch of agriculture which, I think, must be most beneficial to our country.

"*Milesdown, Castlebellingham.*" "JOHN WOOLSEY.

"After the many statements you have published on the flax question, this communication comes rather tardily; but I was unwilling to trouble you until I was in a position to detail, with exactness, although with much diffidence, the wind-up of my limited experience of its culture. This being the first season in which I ever tried my ''prentice hand,' I am aware that I must have been guilty of many errors and shortcomings; but even under these disadvantages, the results of my noviciate may perhaps be considered sufficiently encouraging to induce others to give a fair trial to a crop against which some prejudice exists in the South of Ireland.

"My flax was grown on two small fields—one good land, the other very bad—total contents, 5A. 3R. 28P., Irish. To simplify my statement

—I shall make no distinction in the relative produce of the two, although much discrepancy existed—both had borne wheat in 1850. In Spring, 1851, having well pulverised and cleaned the land, I proceeded, in the month of April, to sow it with one barrel (of 3½ bushels) of Riga seed to the acre, according to the instructions of the Royal Flax Society; and the harvesting of the crop was performed under the directions of a practical instructor from the North, sent down especially for this district. Its intermediate culture only consisted in carefully weeding it, which was rather a tedious operation; and, in August, it was pulled and stacked on the Courtrai system: part I sold in the unthrashed straw, seed and all; and from part I took the seed, with flat mallets made for the purpose, and disposed of the seed to the Messrs. Drummond, seedsmen, Dublin. The straw was sold to Mr. Carleton, of Waterford, to whose fair dealing and prompt payment I bear a willing testimony. I subjoin an account of the expenditure and receipts :—

To ploughing and harrowing an Irish acre twice, ...	£1	0	0
Picking, 4 girls, at 5d, ...	0	1	8
Rolling before and after sowing, and harrowing after, ...	0	4	0
Cost of one barrel of seed, ...	2	8	0
Sowing, ¾ of a day, ...	0	0	7
Weeding, per acre, ...	0	5	0
Pulling, binding, and stacking ditto, ...	0	10	8
Housing ditto, ...	0	1	7
Rent, poor-rate, and county cess, ...	2	5	0
	£6	16	6
Which, for 5A. 3R. (omitting odd perches), is	£35	16	7½
Thrashing, rebinding, winnowing, and sifting seed, ...	2	1	0
Cost of delivering straw in Waterford, ...	3	11	8
Cost of carriage of seed by rail to Dublin, and cartage, ...	1	15	4
Total expenditure on 5A. 3R., ...	£43	14	7½

RECEIPTS.

By 8 ton 7 cwt. 14lbs. of unthrashed straw, at £4 per ton,	£33	8	6
By 8 ton 12 cwt. of thrashed straw, at £2 10s per ton, ...	21	12	6
By 81½ bushels of seed, at 7s 6d per bushel, ...	30	11	3
	£85	12	3
Deduct expenditure, ...	43	4	7½
Balance to profit on 5A. 3R., ...	£42	7	7½
Or nett profit, per acre, of	7	7	4

"In contrasting this profit with that of any corn crop, it must be borne in mind that it was grown on a wheaten stubble; and I would ask, what second crop, at present prices, would bring out so good a result, after all expenses? Let us see what would be the balance likely to follow from barley or oats, grown under similar circumstances, assuming that twelve barrels of barley, or fourteen barrels of oats, might be a fair average crop to expect after wheat. We may take barley as presenting the more favourable probabilities of the two.

"Expenditure of a barley crop per Irish acre :—

To Spring tillage, as before, ...	£1	5	8
One barrel of seed, ...	0	14	0
Reaping, binding, stacking, &c., ...	0	8	0
Thrashing and winnowing twelve barrels, at 8d, ...	0	8	0
Rent and taxes, as before, ...	2	5	0
Total, ...	£5	0	8
RECEIPTS.			
By twelve barrels of barley sold, at 12s per barrel, ...	£7	4	0
By two tons straw, at 13s 4d, ...	1	6	8
Total receipts, ...	£8	10	8
Expenditure, ...	5	0	8
Balance to profit, ...	£3	10	0

or less than half of the profit of flax. With careful culture and suitable land, capable of producing good wheat or superior oats, and after one of these crops, I am of opinion that this crop is worthy the attention of farmers; and a little combining among proprietors might supply the principal desideratum—viz., the establishment of steeping concerns and scutching mills within easy distance of each locality, without which the crop can scarcely become general. There are many small idle corn mills throughout the country which, at a light expenditure, might be adapted to these purposes, and competent men, from the North, put in charge, at moderate salaries, during the infancy of a novel culture. Such steps, I believe, have been taken in Mayo and other counties, where flax was before unknown, and are already producing golden results; and it is notorious, that much of the prosperity of the North is owing to this crop alone. But, setting aside its market value, it would be found most useful to farmers on a small scale for household purposes, and for rearing calves, or for fattening cattle with the boiled seed, for both of which it is excellent.

"I have spun a longer yarn than I intended; but some of friends wished that I should put forward a fair statement of the debtor and creditor sides of my crop, leaving it to others to judge whether it might not be advisable to take some more decided steps to set on foot a movement which would furnish much employment, and which might help, in some degree, to compensate for the ruinous effects of free trade.

"*Coolmore, 22d Nov.,* 1851." "P. CONNELLAN.

"I send you the result of five Irish acres, grown for my employer, the Right Hon. W. F. Tighe, an exact account of the expense having been kept, and which I am ready to prove at any time, though the different items may not correspond with sums laid out by others for the like labour. The land on which the flax was grown is newly-reclaimed mountain, having been drained and subsoiled to the depth of sixteen inches, and top-dressed with fifty barrels of lime to the acre the preceding June. The detailed account will shew the labour, viz.:—

5 acres of land twice ploughed, at 16s per acre, ...	£4	0	0
5 acres of land harrowed, at 5s per acre, ...	1	5	0
Harrowing and rolling in seed, three horses, at 2s 6d per day,	0	7	6
17 girls picking off stones and weeds, at 6d per day, ...	0	8	6
2 men sowing, at 10d; 2 girls carrying seed, at 6d do., ...	0	2	8
25 girls weeding, at 6d per day, ...	0	12	6
50 girls pulling, at 6d do., ...	1	5	0
6 boys pulling, at 8d do., ...	0	4	0
2 men pulling, at 10d do., ...	0	1	8
15½ men stooking, at 10d do., ...	0	12	11
11 men stacking in the field, at 10d per day, ...	0	9	2
16 girls tying and carrying sheaves, at 6d per day, ...	0	8	0
4 horses carting home to the rick, at 2s 6d per day, ...	0	10	0
6 men loading and thatching, at 10d per day, ...	0	5	0
5 barrels of best Riga seed, and expense of carriage, ...	11	17	6
Rent of five acres of land, at 15s per acre, ...	3	15	0
Poor-rate and county cess, at 4s per acre, ...	1	0	0
Cost of delivering in Waterford, 16 miles, say 20s per acre,	5	0	0
	£32	4	5

This shews an outlay of £6 8s 10½d per acre.

"Three acres and a-half of the crop have been sold at £3 10s per ton, which produce £9 7s 2d per acre, leaving a clear profit of £2 18s 3½d; the flax was sold to Messrs. Carleton, of Waterford, and saved on the Courtrai system.

"The above facts would lead to the conclusion, that flax grown on suitable soil would be a remunerating crop. "W. King.

"*Woodstock, 17th Nov.*, 1851."

"On the 15th April, 1851, I prepared a piece of ground near Belfast, measuring 4,900 square yards, and sowed upon it 2½ bushels of Riga flax-seed, which cost £1 10s. The crop was ready for pulling on the 25th of August, the straw being yellow, and the seed fully ripe. On the 8th of September it was weighed, when it was found to yield 69 cwt. 1qr. 14lbs., for which I obtained, from the Cregagh Mill Company, £12 2s 9d. The cost of preparing the crop for market was £5 6s 5d.

"John F. Hodges, M.D.

"*Queen's College, Belfast, 2d January*, 1852."

COMPARISON OF MILL AND HAND-SCUTCHING.

"*Bessbrook*, 18*th* 11*th Mo.*, 1831.

"James MacAdam, Jun.,

"Respected Friend,—I herewith enclose thee a comparative statement, as nearly as I could ascertain, of the expenses and produce of an Irish acre of flax, mill-scutched and hand-scutched. The gain by the former over the latter, if I am correct, is 16s 8d; but, even with this difference, as the latter gives so much employment—say, as stated, one hundred hands per acre—should it not be encouraged in the South and West of Ireland, where employment is so much wanted, and where the quantity sown is too small to induce the erecting of mills? There is no doubt but the mill would do it off-hand with much less trouble. I have stated the probable average of mill-scutched at 56 stones, which I think is nearly correct I know I could give, in truth, very fine accounts of what came under my own observation, viz.:—

RATE PER IRISH ACRE.	Amount.	Expense.	Profit.
73 stones, which sold at 7s per stone,.................	£25 11 0	£10 13 0	£15 18 0
70 stones, which sold at 7s 6d per stone,............	26 5 0	—	16 2 0
82 stones, which sold at 6s 9d per stone,............	27 13 6	—	17 17 6

"But I can also state—

32 stones, at 6s 6d per stone, £10 8s 0d; profit, £0 5s 0d.
35 stones, at 6s 6d per stone, 11 7s 6d; profit, 1 4s 6d.

"However, this season, there is no crop pays so well.

Flax—56 stones, at 7s, give a profit of...	£9 9 0
Wheat, I suppose, ...	4 10 0
Oats, ...	2 5 0

"A statement shewing, the expense of cultivating and preparing for market an Irish acre of flax, by mill and hand-scutching :—

BY MILL.

56 stones (about average produce), at 1s, ...	£2 16 0
Attendance, ...	0 2 0
Drawing to mill, ...	0 5 0
Drawing to Northern market, ...	1 0 0
	£4 3 0
All other expenses, including rent, seed, labour, taxes, &c.,	6 0 0
Balance, profit, ...	9 9 0
56 stones, at 7s per stone, £19 12s.	£19 12 0

BY HAND.

*70 stones, or 1,120lbs., allowing 14lbs. each hand per day—

	£	s	d
Scutching, 80 days, at 8d per day, ...	£2	13	4
Beetling, 20 days, at 8d per day, ...	0	13	4
Drying, ...	0	6	0
Drawing to Northern market, ...	1	0	0
	£4	12	8
All other expenses, including rent, seed, labour, taxes, &c.,	6	0	0
Balance, profit, ...	8	12	4
70 stones, at 5s 6d per stone, £19 5s.	£19	5	0

"All whom I have consulted say, that a lot of flax straw, yielding 56 stones, dressed by mill, will yield 70 when done by hand This seems a great difference; yet some say it is even greater.—I am, thy friend,

"William Dawson."

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*An able scutcher can do from 16lbs. to 18lbs. per day.

Note.—While the above statement shews the advantage of hand-scutching in affording employment, it is much to be regretted that, notwithstanding the Society's repeated attempts to introduce it in the South and West, the extremely small quantity turned out daily by the scutchers (often only 2lbs., and never more than 5lbs. or 6lbs. of fibre) made it so expensive as to cause it to be given up. If the workers were paid by the piece, and proper supervision were exercised by those on the spot, it might yet be carried into effect, with advantage.

PRODUCE OF FLAX.

The following table gives the produce, per Irish acre of flax, as stated by farmers whose flax was purchased at Bessbrook Mill, in 9th, 10th, 11th, and 12th months, 1851. All was mill-scutched, and no seed had been saved.

AFTER POTATOES, IN 1850.

Pointed with spade, or ploughed.	Ploughed in Spring.	Stones of 16lbs. per Irish Acre.	Price.		Total Amount.		
			s.	*d.*	£	*s.*	*d.*
Pointed in	Spring,	35	6	6	11	7	6
Do.	Do.,	49	7	0	17	3	0
Do.	Do.,	49	7	9	18	18	9
	Once ploughed,...	44¾	7	3	16	4	5
	Once ploughed,...	56	6	3	17	10	0
Pointed in	Spring,	31½	6	6	10	4	9
Harrowed,	Not ploughed,	53	7	0	18	11	0
	Once ploughed,...	38	6	6	12	7	0
Harrowed,	Not ploughed,	70	7	0	24	10	0
Harrowed,	Not ploughed,	45½	7	6	17	1	3
Harrowed,	Not ploughed,	63	6	0	18	18	0
	Once ploughed,...	52½	7	6	19	13	9
Poor Lea,	Not ploughed,	39	7	6	14	12	6
Harrowed,	Not ploughed,	49	7	6	18	7	6
	Once ploughed,...	70	6	0	21	0	0
Harrowed,	Not ploughed,	42	6	0	12	12	0
	Once ploughed,...	46	7	9	17	16	6
	Once ploughed,...	42	7	0	14	14	0
	Once ploughed,...	41	7	1½	14	12	1½
	Once ploughed,...	56	7	6	21	0	0
	Once ploughed,...	45½	6	3	14	4	4½
	Once ploughed,...	52½	7	6	19	13	9
	Once ploughed,...	48	6	3	15	0	0
	Once ploughed,...	60	6	3	18	15	0
	Once ploughed,...	56	6	0	16	16	0
	Once ploughed,...	42	6	0	12	12	0
					434	5	2

Average, 49 stones to the acre.

AFTER POTATOES, IN 1849, FOLLOWED BY WHEAT, IN 1850.

Ploughed in Autumn.	Ploughed in Spring.	Stones of 16lbs. per Irish Acre.	Price.		Total Amount.		
			s.	*d.*	£	*s.*	*d.*
Once.	Once.	70	7	6	26	5	0
Once.	Once.	50	6	6	16	5	0
	Twice.	73½	7	0	25	14	6
	Once.	70	7	0	24	10	0
Once.	Once.	54½	8	3	22	9	7½
Once.	Once.	53	8	0	21	4	0
Once.	Once.	66½	6	9	22	8	10½
Once.	Once.	49	6	6	15	18	6
	Once.	52½	7	9	20	6	10½
					195	2	4½

Average, nearly 60 stones to the acre.

AFTER POTATOES, IN 1849, FOLLOWED BY OATS, IN 1850.

Ploughed in Autumn.	Ploughed in Spring.	Stones of 16lbs. per Irish Acre.	Price.		Total Amount.		
			s.	d.	£	s.	d.
Once.	Once.	46	6	3	14	7	6
	Once.	42	6	0	12	12	0
	Once.	53	7	6	19	17	6
	Once.	52½	6	3	16	8	1½
					63	5	1½

Average, 48 stones to the acre.

AFTER LEA, IN 1849, FOLLOWED BY OATS, IN 1850.

Ploughed in Autumn.	Ploughed in Spring.	Stones of 16lbs. per Irish Acre.	Price.		Total Amount.		
			s.	d.	£	s.	d.
Twice.	Twice.	66	7	0	23	2	0
Once.	Twice.	46	7	4½	16	7	8
	Once.	49	7	9	18	19	9
	Twice.	59	7	3	21	7	9
Once.	Twice.	82	6	9	27	13	6
Manured.	Twice.	56	6	6	18	4	0
Once.	Twice.	45½	6	9	13	7	1½
Manured.	Twice.	55	7	3	19	18	9
Once.	Twice.	38	6	9	12	16	6
Once.	Twice.	39	6	9	13	3	3
Once.	Twice.	56	7	6	21	0	0
	Twice.	45½	7	6	17	1	3
Once.	Once.	45	7	3	16	6	3
Once.	Twice.	49	6	6	15	18	6
	Once.	56	7	3	20	5	0
Once.	Once.	42	6	6	13	13	0
Once.	Once.	45½	6	6	14	15	9
Once.	Once.	52½	6	0	15	15	0
					319	15	0½

Average, 51 stones to the acre.

WILLIAM DAWSON.

Bessbrook, Newry, 18*th* 11*th Mo.*, 1851.

ANNUAL BALANCE SHEET

OF THE

ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

Dr.

1850.				
Oct. 31.	—To balance on hands, ...	£365	4	11
1851.				
Oct. 31.	—To subscriptions to this date, ...	538	4	0
—	" accidental receipts, ...	9	1	3
—	" Belfast Banking Company in advance against the Government grant of £1,000, for 1851, ...	584	14	11
		£1,497	5	1

Cr.

1851.							
Oct. 31.	—By Office:—Rent, Taxes, Fuel, Attendance, &c.,				£49	17	4
—	" Printing and Advertising, ...				75	6	7
—	" Postage and Carriage of Parcels, ...				17	5	11
—	" Stationery, ...				10	4	6
—	" Implements, ...				25	0	0
—	" Sundries, not included in the foregoing items,				14	15	2
—	" Secretary's Salary, ...				200	0	0
—	" Insructors' salaries, in full or in part, viz.:—						
	Henry Haslett, ...	£57	14	0			
	R. F. Patterson.	48	7	7			
	W. J. O'Hara, ...	44	14	8			
	Isaac Irwin, ...	38	15	0			
	William Smith, ...	31	2	6			
	Samuel Kennedy, ...	30	10	0			
	John Stewart, ...	29	11	4			
	James M'Aree, ...	23	10	0			
	Hugh M'Dowell, ...	23	4	0			
	Hugh Orr, ...	20	0	0			
	Matthew Fisher, ...	19	10	0			
					366	19	1
	Carry forward, ...				£759	8	7

Brought forward, ...				£759	8	7
Oct. 31.—By Instructors' salaries, in full or in part, viz. :—						
Matthew Harris, ...	19	0	0			
J. De Cock, ...	18	17	4			
Robert Bunting, ...	18	11	0			
John Sloan, ...	18	10	0			
William Anderson, ...	17	5	0			
W. J. M'Kinney, ...	17	10	6			
Thomas Haughton, ...	16	16	0			
Andrew Melville, ...	16	10	0			
D. J. Boyle, ...	16	0	0			
Samuel M'Culloch, ...	14	5	8			
F. B. M'William, ...	10	12	6			
John Boyd, ...	10	0	0			
Samuel Clarke, ...	9	0	0			
Hugh Nelson, ...	6	0	0			
William M'Kittrick, ...	5	0	0			
Joseph Patterson, ...	4	0	0			
James Orr, ...	2	0	0			
				219	18	0
Oct. 31.—By Travelling Expenses, viz. :—						
Instructors, ...	£433	19	9			
Deputation to London, ...	29	15	9			
Secretary, ...	25	18	8			
				489	14	2
— " Balance in hands, ...				28	2	10
— " Cash to balance, ...				0	1	6
				£1,497	5	1

JOHN CHARTERS, } AUDITORS.
JAMES CAMPBELL, }
JAMES MACADAM, JUN., SECRETARY.

SUPPLEMENT,

SHEWING THE RECEIPTS AND DISBURSEMENTS OF THE SOCIETY, FROM ITS FORMATION, 1ST MARCH, 1841, TO 31ST OCTOBER, 1851.

RECEIPTS.

Subscriptions and Donations, ...	£8,073	15	3
Government Grants (not including 1851), ...	3,000	0	0
Belfast Banking Company, in advance for Government Grant of 1851, ...	584	14	11
Repayments for Machinery, ...	249	6	2
Accidental Receipts, ...	31	17	5
	£11,939	13	9

DISBURSEMENTS.

Instructors' Salaries and Travelling Expenses, ...	£8,105	10	2
Secretary's Salary, ...	1,475	0	0
Prizes awarded, ...	482	11	0
Machinery and Implements, ...	429	2	8
Printing and Advertising, ...	575	13	2
Office Rent, Taxes, Fuel, &c., ...	303	4	8
Postage and Carriage, ...	150	10	4
Stationery, ...	77	10	1
Sundries, not included in the foregoing items, ...	340	11	8
	£11,939	13	9

JOHN CHARTERS, } AUDITORS.
JAMES CAMPBELL, }
JAMES MACADAM, JUN., SECRETARY.

CONTRIBUTIONS TO THE SOCIETY'S FUNDS.

	1841 to 1850.			1851.		
HIS ROYAL HIGHNESS PRINCE ALBERT,	£25	0	0			
Abercorn, the Marquis of,	50	0	0	£5	0	0
Aberdein, Gordon, & Co., Montrose,	10	0	0			
Adair, A. Shafto, M.P., Ballymena,	35	0	0	5	0	0
Adair & Gunning, Cookstown,	30	17	0			
Agnew, James, Cairncastle Lodge,	25	0	0			
Ainsworth, H., Cleator, Whitehaven,	10	0	0			
Alexander, Henry,	1	1	0			
Alexander, John, Millford, Carlow,	2	2	0			
Alexander, John, Newtownlimavady,	5	0	0			
Alexander, N., M.P., Portglenone,	31	6	0			
Algeo, Captain, Armagh,	5	5	0			
Allen, Dr. J.,	10	0	0			
Allen, John Read, Mount Panther, Co. Down,	5	0	0			
Allen, W.,	4	0	0			
Anderson, Henry, Ballinacree, County Antrim,	1	1	0			
Andrews, J. & Sons, Comber,	18	8	0	1	1	0
Andrews, Michael, Ardoyne,	5	5	0	1	1	0
Annesley, Viscount, Castlewellan,	4	4	0			
Arbuckle, Lieut.-Col., R.A., Donaghadee,	2	2	0			
Armstrong, William, Lurgan,	4	4	0			
Armstrong, W. Jones, Kippure Park, Blessington,	5	5	0			
Atkinson, Henry, Moy,	1	1	0			
Atkinson, W. S., Portadown,	1	1	0			
Aytoun, James, Kirkcaldy,	2	0	0			
Bacon, Edward, Thorock-hall, Lincoln,	12	12	0			
Baker, Thomas, & Son, London,	2	0	0			
Balfour, Alexander, Kirkcaldy,	1	0	0			
Ballymahon Flax Committee,				10	0	0
Bandon Branch, County Cork,				10	0	0
Bangor, Viscount,	4	0	0	2	0	0
Bankhead, J. B., Glenarm,	9	9	0	1	1	0
Bantry Branch, County Cork,	10	0	0			
Barbour, William, Lisburn,	2	2	0			
Barcroft, J. & N., Stramore,	2	2	0			
Barklie, A. & G., Mullamore,	10	0	0			
Barklie, William, Armagh,	1	1	0			
Barnett, Thomas, & Co.,	1	1	0			
Barter, Dr., Blarney, County Cork,	2	0	0			

	1841 to 1851.	1851.
Barton, Ffolliott W., Clonally, Kish,	£2 2 0	
Bates, John, Belfast,	8 8 0	£1 1 0
Bateson, Sir R., Bart., Belvoir Park,	52 17 0	2 2 0
Bateson, Thomas, M.P., Derry,		1 1 0
Bath, Marquis of,	5 0 0	
Batt, Thomas, Purdysburn, Belfast,	5 0 0	
Beattie, John, Portadown,	1 0 0	
Bells & Calvert, Whitehouse,	54 4 0	2 2 0
Bell, John, & Co., Whitehaven,	1 0 0	
Bell, J. & W. L., & Co., Ballyclare,	1 1 0	
Bell, Thomas, & Co., Lurgan,	5 5 0	1 1 0
Bennett & Adams, Bellydevitt,		2 2 0
Bennett, Thomas, Coleraine,	3 3 0	
Bennett, Wm., Ross, Hereford,	5 0 0	
Benyon & Co., Leeds,	10 0 0	
Beresford, J. B., Learmount,	5 0 0	
Bernard & Koch, Cregagh, Co. Down,	6 6 0	1 1 0
Berry, Joseph, Moira,	1 1 0	
Besnard, Julius, Cork,	1 1 0	
Bessborough, Earl of,	10 0 0	
Bianconi, C., Longfield, Cashel,		10 0 0
Bicknell, George, Kilrea,	4 4 0	1 1 0
Bigger, Lennox, Dundalk,	1 1 0	
Birch, J., Ballybeen, Co. Down,	10 0 0	
Birley, J., & Sons, Kirkham, Lancashire,	155 0 0	
Birney, J. Lisburn,	3 3 0	1 1 0
Bishop Sterne's Charities,	3 0 0	3 0 0
Black, Henderson, Dromara,	2 2 0	
Black, H., Belfast,	1 1 0	
Blacker, W., Armagh,	1 1 0	
Blackwood, James, Strangford,	4 4 0	
Blackwood, William,	2 0 0	
Blakely, Rev. F., Moneyrea,	5 5 0	1 1 0
Blakely, T., M.D.,	1 0 0	
Bland, Rev. R., Whitehouse,	1 1 0	
Blundell, Francis, Navan,	18 14 10	
Boomer, J., & Co., Belfast,	88 11 0	5 0 0
Booth, Sir R. Gore, Bart., M.P., Sligo,	1 1 0	
Borthwick, John, Killroot,	7 7 0	1 1 0
Boyd, James B.,	2 2 0	
Bouch, Joseph, London,	1 1 0	
Boyd, John, & Co., Belfast,	78 3 8	
Boyd, J. E., Letterkenny,	2 2 0	
Boyd, Robert,	1 0 0	
Boyle, Gill, & Co., Leeds,	2 0 0	1 1 0
Brady, Capt. R., Oaklands, Cookstown,	5 0 0	

	1841 to 1850.			1851.		
Brooke, B. G., Moyaver, Co. Antrim,	£1	1	0	£1	1	0
Brooke, Sir A. B., Bart., M.P., Brookborough,	5	0	0	5	0	0
Brooks, John, Bolton,	10	0	0			
Brown, J., & Sons, Donacloney,	5	5	0			
Brown, J. & W., Dundee.	5	0	0			
Brown, R. Clayton, Carlow,	1	0	0			
Brown, Robert, Belfast,	5	0	0			
Brush, C. M., Dromore,	1	1	0			
Bryan, Lieut.-Col., Jenkinstown, Kilkenny,	1	0	0			
Buckley, Henry, Hillsborough, Roscrea,	1	1	0			
Buist, A. J., Dundee,	10	6	0			
Burgess, J. Y., Parkanour, Dungannon,	1	1	0			
Butler, Thomas, Kilkenny,	3	3	0			
"B," Birmingham,	1	1	0			
Cairns, William, Drogheda,	2	0	0			
Caledon, Earl of,	42	0	0	5	0	0
Camm, S., & Co., Manchester,	2	0	0			
Campbell, Henry, Belfast,	10	0	0			
Carlow Branch,				10	0	0
Carty, Cairns, Rogers, & Co., Drogheda,	5	0	0			
Cassidy, Robert, Magherafelt,	1	1	0			
Castlebridge Farming Society, Co. Waterford,	10	0	0			
Cather, David, Newtownlimavady,	1	1	0			
Caulfeild, Hon. Henry, Hockley, Armagh,	9	9	0	1	1	0
Charlemont, Earl of,	43	0	0			
Charley, John, Finaghy, Dunmurry,	25	0	0			
Charley, J. & W., & Co., Seymour-hill,	8	8	0	2	2	0
Charley, Hill, Belfast,	1	1	0			
Charley, M., Woodburn,	3	3	0			
Charters, John, & Co., Belfast,				5	0	0
Clancarty, Earl of,	5	5	0	1	1	0
Clarendon, Earl of,	10	0	0			
Clarke, R., Bailieborough,	1	0	0			
Clarke & Innes, Drogheda,	5	0	0			
Clements, Hon. C. S., M.P., Milford,				5	0	0
Clonbrock, Lord,	10	0	0			
Clonakilty Branch, Co. Cork,	10	0	0			
Close, Lieutenant-Colonel, Drumbanagher, Newry,	15	0	0			
Clothworkers' Company, London,	30	0	0			
Coates & Young, Belfast,	34	0	0	2	2	0
Coddington, H., Oldbridge, Meath,	1	0	0			
Cogry Mill Company, Doagh,	5	0	0			
Cole, Hon. John, Florence-court,	1	0	0	1	0	0
Collum, John, Enniskillen,	1	1	0			
Conolly, Thomas, M.P., Cliff, Ballyshannon,	5	0	0	5	0	0
Conyngham, W. L., Cookstown,	1	0	0			

	1841 to 1850.			1851.		
Cook, William, London,	£20	0	0			
Cooper, E. J., Markree Castle, Sligo,	1	1	0			
Cootehill Branch,	15	0	0			
Cope, A. W., Drumilly, Loughgall,	5	0	0			
Cope, R., Loughgall,	1	1	0			
Coulson, Brothers, Lisburn,	13	3	0			
Coulson, James, Lisburn,	2	2	0	£1	1	0
Coulter, Richard, Newry,	1	1	0			
Courtown, Earl of,	20	0	0			
Cowan, W., & Co., Whiteabbey,	29	4	0			
Crace, H., Belfast,	1	1	0			
Craig, A. W., Belfast,	10	0	0	3	3	0
Cramsie, John, Belfast,	8	8	0			
Crawford, J. S., Crawfordsburn,	3	3	0	1	1	0
Crawford, W. S., M.P., Crawfordsburn,	36	16	0	2	2	0
Crawford & Lindsays, Banbridge,	4	4	0			
Cremorne, Lord,	25	0	0			
Crichton, Hon. Colonel, Crom Castle,	4	4	0			
Crosbie, W. T., Ardfert Abbey, Tralee,	1	1	0			
Cuppage, J., & Co., Lurgan,	32	7	0	1	1	0
Curell, J. & D., Belfast,	25	0	0			
Curtis, Patrick, Dublin,	2	2	0			
Dargan, William, Dublin,	10	0	0	30	0	0
Darley, Rev. J., Dungannon,	1	0	0			
Davison, A. & J., Broughshane,	27	19	0	2	2	0
Dawson, Rev. J. M., Tipperary,	4	4	0			
De Ros, Lord, Strangford,	3	3	0	2	2	0
De Ros, Lady, Strangford,	2	0	0			
Derry, the Lord Bishop of,	10	0	0			
De Salis, the Count, Tandragee,	6	1	0			
Despard, Mrs., Queen's County,	1	0	0			
De Vere, Sir Vere, Bart., Currah-chase, Adare,	2	2	0			
De Vesci, Viscount,	20	0	0	10	0	0
Devonshire, the Duke of,	5	0	0			
Dewhurst, J. & Co., Preston,	2	2	0			
Dobbin, Leonard, Armagh,	1	1	0			
Donegall, the Marquis of,	5	0	0			
Douglas, Charles, Gracehill, Lurgan,	5	0	0			
Down, the Lord Bishop of,	6	6	0	3	3	0
Downshire, late Marquis of,	55	0	0			
Downshire, present Marquis of,	295	0	0	25	0	0
Doyne, Charles J., Wells, Co. Wicklow,	1	1	0			
Drapers' Company, London,				20	0	0
Drogheda Branch,	25	0	0			
Dromore, the Very Rev. the Dean of, Waringstown,	2	2	0			
Druitt, Thomas, Donacloney,	2	2	0			

	1841 to 1850.	1851.
Duff, Admiral, Elgin,	£2 2 0	
Dufferin, Dowager Lady, Clifton,	15 0 0	
Dufferin and Claneboye, Lord,	5 0 0	£2 2 0
Duffin, C., & Co., Belfast,	6 6 0	
Dunbar, M'Master, & Co., Gilford,	162 18 0	10 0 0
Dungannon, Viscount,	5 0 0	5 0 0
Dunmanway Branch, Co. Cork,	10 0 0	
Dunmurry Spinning Company,	4 4 0	2 2 0
Durham, A., Belvidere, Co. Antrim,	2 2 0	
East Mill Company, Brechin,	2 0 0	
Edward, A. & D., & Co., Dundee,	5 0 0	
Enniskillen, Earl of,	4 0 0	4 0 0
Erne, Earl of,	45 5 0	5 0 0
Evans, T. K., Armagh,	1 0 0	
Ewart, W., & Son, Belfast,	20 0 0	5 0 0
Falls Mill Company,	148 11 0	
Farmer, Sir G. R., Bart., Bideford,	1 1 0	
Ferguson, J. F., Belfast,	9 4 0	
Ferguson, J. S., & Co., Belfast,	27 2 0	
Ferguson, Sir R. A., Bart., M.P.,	10 0 0	
Ferguson, T., & Sons, Whiterock,	2 2 0	1 1 0
Fethard Flax Society,		10 0 0
Filgate, W., Co. Louth,	1 1 0	
Filgate, F., Hillsborough,	1 1 0	1 1 0
Fisher, John, & Co., Belfast,	14 7 0	
Fishmongers' Company, London,	35 15 0	5 0 0
Fitzpatrick, Right Hon. J. W., M.P., Lisdaff,	10 0 0	
Fitzpatrick, R. W., Granston Manor,	10 0 0	
Fletcher, Alexander, & Co., Glasgow,	63 15 0	5 0 0
Foott, H. B., Carigacunna Castle, Cork,	1 1 0	
Forsythe & Orr, Belfast,	47 6 0	
Fortescue, Thomas, Ravensdale,	15 0 0	5 0 0
Foster, R., Springfield, Dungannon,	2 2 0	
Gailey, Daniel, Coleraine,	1 1 0	
Galmoy Farming Society, Co. Kilkenny,	15 0 0	
Gamble, J. & W., Carrickfergus,	6 1 0	
Gartland, T. M'E., Carrickmacross,	1 1 0	
Gascoyne, Misses, Kilfinane, Co. Limerick,	10 0 0	1 1 0
German, Petty, & Company, Preston,	115 0 0	
Gervais, Rev. F. Cecil, Augher,	8 3 0	
Gibson, James, Belfast,	1 1 0	1 1 0
Gihon, William, & Sons, Ballymena,	5 5 0	1 1 0
Given, A., Newtownlimavady,	23 18 0	
Gladstone, John, London,	5 0 0	
Glasgow & Wood, Cookstown,	1 1 0	
Glendinning, H., Portadown,	1 0 0	

	1841 to 1850.			1851.		
Goddard, James, Belfast,	£6	1	0			
Gordon, R. F., Craigdarragh,	1	1	0	£1	1	0
Gore, Col. A. K., Beleek Manor, Ballina,	2	2	0			
Gore, R. Ormsby, Mayo,	1	1	0			
Gosford, Lord,	20	0	0			
Græme, Major, Crieff, Perthshire,	1	0	0			
Gradwell, Chadwick, & Co., Drogheda,	57	10	0	5	0	0
Graham, William, Lisburn,	1	0	0			
Grandison, Thomas, Orisaba, Mexico,	1	1	0			
Gray, William, & Sons, Whitehouse,	10	0	0			
Green, James, & Co., Keady,	18	7	4			
Greer, George, Lurgan,	10	10	0	1	1	0
Greer, James,	3	3	0			
Greg, Thomas, Ballymenoch,	1	1	0	1	1	0
Greville, Algernon,	1	1	0			
Grimshaw, Edmund, Mossley,	65	0	0	5	0	0
Grimshaw, James, & Sons, Whitehouse,	82	12	6	5	0	0
Gunning & Campbell, Belfast,	1	1	0	1	1	0
Gunning & Quarrell, London,	2	0	0			
Hall, Roger, Narrowwater-Castle, Newry,	39	12	0	2	2	0
Hancock, John, Lurgan,	9	9	0	1	1	0
Hancock, Professor, Belfast,	1	1	0	1	1	0
Harden, James, Harrybrook, Co. Armagh,	1	1	0			
Hardy, C.,	5	0	0			
Hardy, J.,	1	1	0			
Harris, J. Porter, Ashfort, Tynan,	1	1	0			
Harrison, John, Mertoun, Belfast,	1	1	0			
Hawkshaw, Lieut.-Col., Blaris Lodge, Lisburn,	2	2	0			
Hay, Brothers, & Co., Ballina,	1	1	0			
Hayes, F. W., Seapatrick, Banbridge,	4	12	0			
Hayes, Richard, Millmount, Banbridge,	2	2	0			
Hemphill, Hunter, & Co., Greenfield, Coleraine,	14	14	0	2	2	0
Henderson, Mr.,	1	0	0			
Hendry, J. & W., Kirkcaldy,	1	0	0			
Henning, John, Waringstown,	18	13	0	2	2	0
Henry, George, Tassagh, Keady,	2	2	0			
Herdman, J. & J., & Co., Belfast,	94	16	0	5	0	0
Herdmans & Co., Strabane,	6	5	0			
Heron, Hugh, Banbridge,	1	0	0			
Hertford, late Marquis of,	100	0	0			
Hertford, present Marquis of,	150	0	0	25	0	0
Heuzé, M., Landerneau, France,	1	0	0			
Hewitt, Hon. and Rev., J.P.,	1	0	0			
Heyn, Gustavus, Belfast,	4	4	0			
Heytesbury, Lord,	10	0	0			
Higginson, Henry, Leeds,	1	1	0			

	1841 to 1850.			1851.		
Higginson, Wm., Leeds,	£1	1	0			
Hill, Lord George A., Gweedore,	6	1	0			
Hill, Lord A. Edwin, M.P.,	5	0	0	£5	0	0
Hillsborough, Earl of,	2	0	0			
Hincksman, Furness, & Co., Preston,	70	0	0			
Hind, John, & Sons, Belfast,				5	0	0
Hives & Atkinson, Leeds,	40	0	0			
Houston, R. B. B., Orangefield,	22	12	0	2	2	0
Hudson, William, Mount-Caulfied, Newry,	2	0	0			
Hull, Wilson, & Co., Belfast,	37	19	0			
Hull, Hart, & Co.,	2	2	0	2	2	0
Hunter & M'Kisack, Belfast,	1	1	0			
Hurst, C.,	1	1	0			
Hutchinson, John, Tandragee,	1	1	0			
Idrone Farming Society, County Carlow,	10	0	0			
Inistioge Farming Society, Co. Kilkenny,				10	0	0
Irish Society, the Hon., London,	45	0	0	10	0	0
Ironmongers' Company, London,	5	0	0	5	0	0
Irwin, Crommelin, Newgrove, Belfast,	1	1	0			
Irwin, J. R., Carnagh, Keady,	2	2	0			
Jackson, F., Roscrea,	1	1	0			
Jackson, J. K.,	1	1	0			
Jackson, Thomas, Workington,	1	1	0			
Jackson, Thomas, Belfast,	1	1	0	1	1	0
Jackson, William,	1	0	0			
Jaffe, Brothers, Hamburgh,	1	0	0			
Jamieson, Henry, Clonmel,	1	0	0			
Jobling, E., Carlisle,				1	1	0
Johnson, John, Moy,	1	1	0			
Johnston, Joseph, Knappagh, Armagh,	1	1	0			
Jones, John, Templeranney, Arklow,	1	1	0			
Jones, Lewis G., Wood-Hill, Dromore West,	1	1	0			
Jones, Miss, Kilwaughter-Castle, Larne,	2	0	0			
Jones, Major, Drumard, Co. Leitrim,	1	1	0			
Kavenagh, Lady Harriett, Kilkenny,	1	0	0			
Kavenagh, J. B., Newtownlimavady,	1	1	0			
Kay, James, & Son, Manchester,	57	10	0			
Kempson, Wm., Bromyard, England,	1	1	0	1	1	0
Kennedy, James, & Sons, Belfast,	21	14	0	2	2	0
Ker, David S., M.P., Montalto,	10	0	0			
Kilkenny Branch,				10	0	0
King, Henry, Dungiven,	2	2	0			
King, James,	1	1	0			
King, Michael,	1	0	0			
Kingston, A. C., Longford,	1	1	0			
Kinmond, Peter, Dundee,	1	0	0			

	1841 to 1850.			1851.		
Kinmond & Hill, Dundee,	1	0	0			
Kirk, William, Keady,	£4	2	0			
Kirkpatrick, Dr., Dublin,	2	2	0	£1	1	0
Kirwan, Denis, Castlehacket, Tuam,	2	2	0	1	1	0
Knox, J. & W., Kilburnie, Ayr,	1	0	0			
Lalor, Patrick,	1	1	0			
Lancey, Captain, Newtownlimavady,	1	0	0			
Landall, D., & Co., Kirkcaldy,	1	1	0			
Lansdowne, Marquis of,	10	0	0			
Larne Farming Society,	10	0	0			
Lascelles, Rev. R. P.,	1	1	0			
Law, Samuel, Banbridge,	29	12	0			
Leadbetter, J., & Co., Belfast,	2	2	0	2	2	0
Leadbetter, Adamson, & Co., Blairgowrie,	2	0	0			
Leathem, J. & W., Derry,	5	0	0			
Lee & M'Kinstry, Armagh,	1	1	0			
Ledlie, George,	1	1	0			
Leinster, Duke of,	30	0	0			
Leslie, C. P., M.P., Glasslough,	45	0	0			
Leslie, Edmund, Donaghadee,	3	3	0			
Leslie, Rev. E., Anahilt,	4	3	0			
Leslie, Wm., Donaghadee,	1	1	0			
Lewis, A. G., Monaghan,	1	1	0			
Limerick Agricultural and Flax Society,				10	0	0
Lindsay, D., Ashfield, Dromore,	6	5	0	1	1	0
Littledale, A. H., Bolton-Hall, Lancashire,	1	1	0			
Lloyd, R.,	1	1	0			
Local Agricultural Fund,	100	0	0			
Londonderry Farming Society,	15	0	0			
Londonderry, Marquis of,	30	0	0			
Louth Farming Society,				15	0	0
Lowry, Joseph, Belfast,	2	2	0			
Lawson, Andrew, Arbroath,	4	0	0			
Lucan, Earl of, Castlebar,	15	0	0			
Lucas, Right Hon. E., M.P.,	1	1	0			
Lucas, F., Dublin,	1	1	0	1	1	0
Ludolf, H., Leeds,				1	1	0
Lurgan, Lord,	145	0	0			
Magill, S. R., Cookstown,	3	1	0			
Mahoney, Rev. Denis, Kenmare,	5	0	0			
Malcolm, A. G., Kirkcaldy,	1	1	0			
Malcolm, James, Lurgan,	5	5	0	1	1	0
Mann, A., & Son, Arbroath,	4	2	0			
Marley, Gabriel, London,	1	0	0			
Marshall & Co., Leeds,	215	0	0	10	0	0
Martin, John, jun., Killileagh,	36	2	0	2	2	0

	1841 to 1850.			1851.		
Mathew, John, Rathcloheen, Cashel,	£1	1	0			
Mathew, Very Rev. T., Cork,	2	2	0			
Maxwell, J. W., Finnebrogue, Co. Down,	10	0	0			
Maxwell, R. P., Groomsport, Co. Down,	1	1	0			
Mayo, Earl of,				£5	0	0
Meade, Hon. General, London,	25	5	0	5	0	0
Mell Mill Company, Drogheda,	14	6	3			
Mercers' Company, London,	75	0	0	5	0	0
Metcalf, J. & G., Pateley-Bridge, Ripon,	2	2	0			
Middleton Union Farming Society, Co. Cork,	15	0	0			
Millar, Alexander, Ballycastle,	1	1	0			
Millar, Rowley, Moneymore,	1	1	0			
Milne, Cruden, & Co, Aberdeen,	25	0	0			
Molony, James, Kiltanon, Clare,	2	2	0			
Monaghan Branch,	15	0	0			
Monkstown Spinning Company, Whitehouse,	33	16	0	2	2	0
Monsell, Wm., M.P., Tervoe, Limerick,	2	0	0			
Monteagle, Lord,	10	5	0			
Moore, Henry, Barne, Co. Carlow,	1	0	0			
Moore, James, Moorefort, Co. Antrim,	3	0	0			
Moore, J. S., Ballydivity, Co. Antrim,	5	0	0			
Moore, Samson, Ballynacree, Co. Antrim,	5	0	0			
Morfit, John, Leeds,	17	17	0	3	3	0
Mortimer, R., Carrick-on-Shannon,	1	1	0			
Mulhollands, Belfast,	100	0	0			
Mulholland, A., & Son, Belfast,	156	13	0	10	0	0
Mulholland, S. K., & Hinds, Belfast,	149	6	0			
Mulholland, William, Belfast,	2	10	0			
Munn, John, jun., Londonderry,	20	0	0			
Murdoch, William, Monaghan,	1	1	0			
Murland, James, Castlewellan,	95	0	0			
Murphy, John, & Co., Linfield, Belfast,	17	10	0			
M'Adam, Brothers, & Co., Belfast,	11	6	0	2	2	0
Macart, Dr., Dromore,	2	2	0			
Macartney, G., Lissanoure-Castle,	26	1	0			
Macauley, Patrick, Randalstown,	23	9	0			
M'Cartan, J., Waringstown,	6	6	0			
M'Causland, M., Newtownlimavady,	5	0	0			
M'Clelland, James, Banville,	4	4	0			
M'Clelland, William, Dromore,	4	4	0	1	1	0
M'Clure, Thomas,	2	2	0			
M'Donald, A., & Co., Kirkcaldy,	1	1	0			
M'Donnell, E., Glenarm-Castle,	10	6	0	2	2	0
M'Gaw, William,	1	0	0			
M'Gildowney, J., Ballycastle,	1	0	0			
Mackay, James,	1	1	0			

	1841 to 1850.			1851.		
M'Kean, Henry, Keady,	£1	1	0			
M'Kee, John, Keady,	1	0	0			
M'Kenzie, Alexander,	1	1	0			
M'Kibbin, R., M.D., Ballymacarrett,	31	0	0	£2	2	
M'Kinstry, Lee, Armagh,	1	1	0			
M'Murray, G., & Co., Waringstown,	2	10	0			
M'Murray, Thomas, & Co., Dromore,	14	0	0	2	2	0
M'Naghten, Sir E. C. W., Bart., Bushmills,	2	2	0			
M'Naghten, Sir F. W., Bart., Bushmills,	12	10	0			
M'Naghten, B., Ballyboggy, Coleraine,	10	10	0	1	1	0
M'Neece, Rev. F.,	1	1	0			
M'Neill, J., Parkmount, Belfast,	12	7	0	1	1	0
Macoun, John, Kilmore,	1	0	0			
M'Peake, W., Ballymena,	1	1	0			
M'Watty, James, Castleblaney,	1	1	0			
Nenagh Agricultural Society,				10	0	0
Nesbitt, John, London,	7	2	0			
Newry and Mourne, Viscount, M.P., Rosstrevor,	26	5	0	1	1	0
Newton, P. J., Dunleckney, Carlow,	2	0	0			
Nicholson, George, Donacloney,	1	1	0			
Nicholson, John, New York,	3	7	0			
Nicholson, Joseph,	2	2	0			
Nicholson, R., Donacloney,	1	1	0			
Nicholson, William, Donacloney,	1	1	0			
Niven, Richard, Chrome-hill,	10	10	0	1	1	0
Norris, John, Camowen, Omagh,	2	2	0	1	1	0
Norrie, C., & Sons, Dundee,				1	1	0
Nugent, Colonel, Portaferry,	15	0	0			
O'Brien, W. S., M.P., Cahirmoyle,	1	1	0			
Ogilby, Sir J., Bart., Baldovan, Perthshire,	1	0	0			
Oliver, W., Spring-Lodge, Kilfinane,	1	0	0			
Orr, Andrew,	1	1	0			
Orr, William, & Sons, Glenalina, Belfast,	1	1	0			
Overend, J., & Co., Darlington,	1	1	0			
Palmerston, Viscount,	1	1	0			
Parker, Preston, & Co., Belfast,	5	0	0			
Paton, J. & G., Montrose,	10	5	0			
Patrick, J., & Sons, Ballymena,	4	4	0	1	1	0
Patton, William, Armagh,	1	1	0			
Peel, Right Hon. Sir Robert, Bart.,	25	0	0			
Percival, Spencer, Finnebrogue,	1	1	0			
Phibbs, William, Seafield, Sligo,	1	1	0			
Pike, Jonathan, Coalisland,	1	0	0			
Pirrie, William, Belfast,	1	1	0			
Porter, H. J., Tandragee,	2	2	0			
Porter, Rev. J. G., Lisbellaw, Enniskillen,	1	0	0			

	1841 to 1850.			1851.		
Porter, J. G. V., Kilskerry, Trillick,	£1	0	0			
Powerscourt, Viscount, Representatives of,	20	0	0	£5	0	0
Prentice, H. L., Caledon,	9	9	0	1	1	0
Preston, John, & Co., Belfast,	7	2	0	1	1	0
Price, James, Saintfield,	8	8	0	2	2	0
Price, Nicholas, Saintfield,	20	0	0			
Price, Sir Charles, & Co., London,	10	0	0			
Primate, the Lord,	20	0	0	3	0	0
Provincial Bank of Ireland,	20	0	0			
Quarell, Francis, London,	1	1	0			
Quinn, James, Dromore-House,	1	1	0			
Quinn, James Henry, Newry,	1	1	0			
Quinn, Peter, Dromore-House,	1	1	0			
Ram, Stephen, Ramsfort, Wexford,	1	1	0			
Ranfurley, Earl of,	37	0	0	5	0	0
Reilly, J. T., Scarva, Loughbrickland,	7	5	0	1	1	0
Renny, Sons, & Co., Arbroath,	6	6	0	1	1	0
Renshaw, W., & Co., Manchester,	8	8	0	2	2	0
Richards & Co., Aberdeen,	25	10	0			
Richardson, Brothers, & Co., Belfast,	73	8	0	2	2	0
Richardson & Co., Lambeg,	61	10	0	5	0	0
Richardson, H., Somerset, Coleraine,	12	11	0			
Richardson, Miss J., Richhill,	22	12	0	2	0	0
Richardson, J. G., Newry,	2	2	0			
Richardson, J. & T., & Co., Springfield,	8	6	0	1	1	0
Richardson, Samuel, & Co., Lisburn,	30	0	0			
Richardson, J. J., Lisburn,	6	6	0	2	2	0
Richardson, J. N., Sons, & Owden, Belfast,	97	10	0	5	0	0
Roberts, John, Collin, Lisburn,	3	3	0	1	1	0
Robinson, George, Drimoleague,	1	0	0			
Roche, E. B., M.P., County Cork,	5	0	0			
Roddy, Robert, Belfast,	4	4	0			
Roden, Earl of,	10	0	0			
Rollo, R., Moyfort, Ballina,	1	1	0			
Rome, Joseph, Carlisle,				1	1	0
Roscrea Branch,				10	0	0
Ross, D. R., M.P., Rosstrevor,	10	0	0			
Rossmore, Lord,	5	0	0			
Rowan, Major, Merville,	22	6	0			
Rushout, the Hon. Capt., M.P., Worcester,	1	1	0			
Rutherford & Co , Dunfermline,	2	2	0			
Russell, James, Dunlewey, Co. Donegall,	2	2	0			
Russell, Matthew, Newry,	1	1	0			
Sadler, Fenton, & Co., Belfast,	8	6	0	2	2	0
Sadler, S. & Co., London,	1	1	0			
St. Leger, Hon. A. B., Adare, Limerick,	2	0	0			

	1841 to 1850.	1851.
Salters' Company, London,	£10 10 0	
Saunders, Miss, Fortgranite, Baltinglass,	1 1 0	
Saunders, R. F., Baltinglass,	1 0 0	
Savage, John, Belfast,	1 1 0	£1 1 0
Scott, Major, Willsbro', Derry,	1 1 0	
Seaver, Captain J., Heath-Hall, Newry,	5 0 0	
Shaw, Edward, & Co., Belfast,	24 2 0	
Shaw & Houghton, Colebridge,	62 10 0	
Shaw, Joseph, Templemills,	27 10 0	
Shaw, William,	15 0 0	
Shirley, Evelyn, P., M.P., Lough Fea,		5 0 0
Shouldham, Lieutenant-General, Dunmanway,	2 2 0	
Shouldham, John, Ballymahon,		1 1 0
Simms, William, Belfast,	3 3 0	1 1 0
Simpson, John,	1 0 0	
Skibbereen Branch, Co. Cork,	15 0 0	
Skinner, C. G. M'G., Dundrum,	2 2 0	1 1 0
Sligo Branch,	10 10 0	
Sligo, Marquis of,	10 0 0	
Smyth, John, & Co., Banbridge,	27 2 0	
Smyth, Ralph, Drogheda,	1 0 0	
Spencer, Lawrence, & Co., Preston,	2 2 0	
Sproul, John, Dublin,	1 0 0	
Staples, Edmund, Queen's County,	1 1 0	
Staples, Sir T., Bart., Lissan, Co. Tyrone,	5 0 0	
Stevenson, J. & W., Roan Mills, Dungannon,	6 5 0	
Stewart & M'Clelland, Ligoneil,	99 19 2	
Stewart & Savage, Lisburn,	22 10 0	
Stewart, R., & Sons, do.,	13 7 0	1 1 0
Storar, Thomas & Co., London,	10 6 0	2 2 0
Stoney, Isaac, Gilford,	1 0 0	
Story, A., Carrick, Co. Fermanagh,	1 0 0	
Stradbally Flax Society,		10 0 0
Straker, William, London,	1 1 0	
Stringer, Captain, Tynan,	1 0 0	
Stronge., Sir J. M., Bart., Tynan-Abbey, Armagh,	16 16 0	2 2 0
Sturrock, John, Dundee,		1 1 0
Stuart de Decies, Lord,	5 0 0	
Sullivan, John, Kinsale,	1 0 0	
Swan, P. D., Kirkcaldy,	2 0 0	
Symes, John, Ballina,	1 1 0	1 1 0
Taylor, Hon. & Rev. E., Ardgillan,	5 0 0	
Templeton, Viscount,	70 0 0	
Tennent, R. J., M.P., Belfast,	6 6 0	1 1 0
Tennent, J. Thompson, Belfast,	9 5 0	
Tenison, E. K., M.P., Kilronan-Castle,	1 1 0	

	1841 to 1850.	1851.
Tenison, Lady Louisa, do.,	£1 1 0	
Thompson, John, Lowwood, Belfast,	2 2 0	
Thompson, R. & Co., Wolfhill,	98 15 0	
Tirkeeran Farming Society, Co. Derry,	15 0 0	
Tottenham, Rev. R. L., Carrickmacross,	1 1 0	£1 1 0
Townsend, S. R., Skibbereen,	1 0 0	
Trail, W., Ballylough, Bushmills,	5 4 0	
Trinity College, Dublin,	10 0 0	
Trower, E. Spencer, Herts,		1 1 0
Tullamore Branch, Co. Westmeath,	10 0 0	
Verner, Sir W., Bart., M.P., Churchhill, Moy,	45 0 0	5 0 0
Vesey, S., Derrabard, Fintona,	2 2 0	
Waithman & Co., Yealand, Lancashire,	5 0 0	
Walker, Mark, Leeds,	4 4 0	
Walker, R. & S., Tullygirvan,	13 11 0	
Walker, W., Carrickfergus,	15 0 0	
Waller, Dr., Pallaskenry, Limerick,	2 0 0	
Wandesford, J. B., Castlecomer,	1 0 0	
Waring, Major,		1 1 0
Waring, Richard, Newry,	1 1 0	
Warren, J. C. B., Horkesley-Hall, Essex,,	2 0 0	
Waterford Flax Society,		10 0 0
Waterford, Marquis of,	55 0 0	5 0 0
Watkins, J. G., Woodfield, Stourport,	1 1 0	1 1 0
Watson, James, Brookhill,	16 16 0	
Watson, R., & Sons, Lurgan,	4 4 0	1 1 0
Watson, William, New York,	2 0 0	
Watts, Samuel,	1 0 0	
Waugh, Miss,	1 1 0	
Waugh, Henry, Banbridge,	1 1 0	
Wexford Union Agricultural Society,		10 0 0
White, W., Newton-Lodge, Sligo,	1 1 0	
Wiggins, Henry, Muff, Co. Derry,	6 0 0	
Wilkinson & Co., Leeds,	42 2 0	
Wilks, J., London,	2 0 0	
Willis, H. H., & Co., London,	1 1 0	
Wilson, J. & R., Derry,		1 1 0
Wilson, J., & Sons, Whitehaven,	1 1 0	
Wilson, D. J., Belvoir, Co. Clare,	1 1 0	
Wittowsky, Querfeldt, & Co., Riga,	5 0 0	
Wolsey, John, Portadown,	1 0 0	
Woods, Charles, Moy,	1 1 0	
Wynne, John, Hazlewood, Sligo,	2 1 0	
Young, J., & Co., Ballymena,	3 3 0	1 1 0

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56 E. 15,

THE TWELFTH

ANNUAL REPORT AND TRANSACTIONS

OF THE

ROYAL SOCIETY

FOR

THE PROMOTION AND IMPROVEMENT

OF THE

GROWTH OF FLAX IN IRELAND:

PARSONS LIBRARY
University of
MICHIGAN

WITH AN APPENDIX.

TREASURER'S STATEMENT OF ACCOUNTS,

AND

LIST OF SUBSCRIPTIONS AND DONATIONS,

FOR THE YEAR ENDING 31st OCTOBER, 1852.

BELFAST.
PRINTED BY W. & G. AGNEW,
ARTHUR-SQUARE.
1852.

7

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RULES OF THE SOCIETY.

I.—That all persons paying a subscription of *one guinea*, annually, be constituted ordinary members.

II.—That the Society, besides its ordinary members, do consist of a President, Vice-President, a General Committee of Management, a Treasurer, and a Secretary.

III.—That the Treasurer and Committee of Management be annually elected, by general meeting of the Society, from among its members.

IV.—That the Society do meet in the month of November, of each year, to elect officers, hear reports, make or alter rules, and transact such other business as may come before it.

V.—That the General Committee do meet on the last Wednesday in each month, for the transaction of the ordinary business of the Society, three members required to constitute a quorum; the Secretary to call special meetings, at the request of three members of the Committee, who may judge it expedient to do so.

VI.—That, as the utility of this Society will be much promoted by a number of persons taking an interest in it, it will be accessible to all, on the payment of one guinea, annual subscription; but, as the funds so procured would be, most probably, inadequate to its management, donations shall be solicited from persons who can afford such sums as will enable the contemplated objects of the Society to be effectually carried out; and it is confidently expected, that, for an object of such national importance, such contributions will be given, as will put its success beyond a doubt, as far as the means of working it are concerned; and that the zeal and discretion of its managers will secure that benefit for the undertaking which its importance demands.

VII.—That every one who becomes a member shall continue to be considered as such, and his subscriptions justly due to the funds of the Society, until he gives notice, in writing, to the Secretary, of his intention to withdraw.

VIII.—That no member, in arrear two years or more, shall be permitted to take part in any debate of the Society, or give a vote upon any question, until such arrear be paid up.

IX.—The Treasurer shall receive all moneys belonging to the Society, and lodge same in the Bank which may be appointed to keep the accounts, when it may accumulate to the sum of £50 in his hands. He shall also draw cheques, and pay such sums as may be voted by the General Committee, at its meetings, but not without its authority; and said cheques shall be signed by the Chairman of the meeting, the Treasurer adding also his own signature. He shall also furnish a yearly statement of accounts, and report monthly receipts and expenditure, at the General Committee meetings, shewing a list of members whose subscriptions remain unpaid, at least once a-year.

X.—The Secretary shall conduct the correspondence of the Society, keep the books of it and of the Committee, take charge of all matters connected with their proceedings, give notice of meetings to those entitled to them, and attend to any duties the Committee may direct.

XI.—All new rules, or alterations of the present regulations, to be made at the annual meeting of the Society; notice of such rule or alteration to be proposed having been given to the Committee, at least a fortnight previous to the general meeting.

XII.—That this Society shall encourage Branches, in different districts, for the purpose of forwarding its objects,—to correspond, and otherwise co-operate with the General Committee; the President of each of the Local Branches to be an *ex-officio* member of the General Committee, and to be entitled to the regular notices of meetings,—each Branch to consist of subscribers to the Society only.

XIII.—That, in order to afford every facility to Local Farming Societies and Branches, in the South and West of Ireland, for obtaining the services of the Flax Society's Agriculturists, the following be the regulations in future:—

First.—Every Branch or Local Farming Society, as aforesaid, which shall incorporate itself with the Flax Society, by contributing to it not less than *Ten Pounds*, annually, shall be entitled, while it so contributes, to the service of a Flax Agriculturist, for two weeks in the sowing, and three in the pulling seasons; the salary of the Agriculturist, and his travelling expenses to the district, to be defrayed by the Flax Society; but his expenses, while occupied within the bounds of the district, to be defrayed by the Local Society or the individuals employing him.

Second.—The Flax Society will send to the Local Society, so qualifying, one of the Agriculturists, during the Winter, if required, to select and prepare land for the flax crop.

Third.—A sufficient supply of the Society's publications will be furnished free of charge.

Fourth.—An additional week of the Agriculturist's services will be given, for every additional *two pounds* subscribed by the Local Society.

XIV.—That, in case of any individual landed proprietor being desirous of introducing flax culture, in a district where there is no Local Society, or where it has not qualified, a subscription of not less than *one guinea* to this Society will enable each individual to a certain time of the Agriculturist's services, to be regulated by the Committee of the Flax Society; and that, in all such cases, the expenses of the aforesaid Agriculturist, to and from the district, and while engaged on the estate, shall be defrayed by the landed proprietor so requiring him.

ROYAL SOCIETY

FOR

THE PROMOTION AND IMPROVEMENT

OF THE

GROWTH OF FLAX IN IRELAND.

(FROM THE BELFAST PAPERS, OF 6TH NOV., 1852.)

THE twelfth annual meeting of this Society was held on Friday, 5th Nov., in its rooms, Commercial Buildings, Belfast. The attendance, as will be seen by the following list of those present, was highly respectable and influential:—The Marquis of Downshire, the Bishop of Down and Connor, Sir J. M. Stronge, Bart., Tynan Abbey; A. Shafto Adair, Esq., D.L., J.P., Ballymena; Very Rev. the Dean of Ross, J. Temple Reilly, Esq., D.L., J.P., Scarva; Rev. J. Grey Porter, Lisbellaw, Fermanagh; W. Sharman Crawford, Esq., D.L., J.P., R. B. B. Houston, J.P., Orangefield; Geo. J. Clarke, J.P., Steeple; R. F. Gordon, J.P., Craigdarragh; H. Anderson, J.P., Ballynacree House, Ballymoney; D. Lindsay, J.P., Ashfield; C. G. M'G. Skinner, J.P., Ballyalton; F. Filgate, J.P., Hillsborough; Langford Heyland, J.P., Portglenone; John Harrison, J.P., Mertoun; Dr. Hamel, of the Imperial Academy of Sciences, St. Petersburgh; Gustavus Heyn, Prussian Consul; R. M'Kibbin, M.D., Professor Hodges, Thos. Richardson, Springfield; Jonathan J. Richardson, Lisburn; R. Niven, Chrome Hill; John Charters, Charles Duffin, John Roberts, Collin; Jas. M'Adam, F.G,S., J. Birney, Lisburn; Jas. Shaw, John Borthwick, Kilroot; Henry Anderson, jun., Ballynacree; Adam Duffin, John Herdman, James Wilson, Carrickfergus; Alexander Hunter, Dunmurry; H. Haslett, Newtownlimavady; Edward Walkington, R. Leadbetter, W. Ferguson, Whiterock; John Fisher, Henry Steen, James Dickson, Gilford; C. Shaw, John Henning, Waringstown; T. M'Cay, Dromore; J. Loughbridge, Ballymena; J. M'Bride, Armagh; V. Holmes, American Consul; Isaac Irwin, Dungiven; John Savage, R. Walker, Tullygirvan; John Preston, &c., &c.

A number of specimens of flax straw and fibre, flaxseed, yarns, &c., were displayed on tables in the room. The straw was from the Counties of Monaghan, Cork, Tipperary, Waterford, Mayo, and Sligo. The seed was grown in Down, Cork, Mayo, Sligo, Limerick, and Tipperary, and one sample was from Yorkshire. Of the fibre there were three series of specimens. One was shewn in illustration of Schenck's hot-water system of steeping, including fibre from the Cregagh, Roscrea, Clonmel, and Ballymahon retteries, in Ireland; from those of Patrington, Newport, Rawcliffe, and Selby, in England; and from Redford, in Fifeshire. The quality of the English and Scotch was very superior, especially of the series from Selby, in Yorkshire. A number of samples of flax, both in the scutched and hackled state, and of yarn spun from it, were shewn as examples of Watt's new method of steaming flax. These attracted great attention, and seemed to warrant the sanguine expectations entertained by many of the success of this method. There were some stricks of fibre, prepared from unsteeped straw, in County Cork, suited for coarse fabrics. Finally, several samples of the usual country flax, of this year's crop, were displayed, many of which were of such a quality as to shew that the crop of 1852 has been a remarkably good one. We noticed one, ticketed as having been sold for £113 per ton, whose fineness and silkiness, especially in the hackled state, could scarcely be excelled by the best products of Belgium. We understand that upwards of 500 stones of this fine lot were bought by a Belfast spinner.

The chair was taken by the President of the Society, the Most Noble the Marquis of Downshire.

His LORDSHIP said that, before he called on the Secretary to read the annual report, he begged to read a letter which had been addressed to him, as president, by the Baron von Viebahn, President of the Society for the Promotion of the Growth of Flax in Prussia. It was as follows:—

"TO THE PRESIDENT OF THE ROYAL FLAX SOCIETY OF IRELAND.

"MY LORD,—The undersigned, President of the Society for the Promotion of the Growth of Flax in Prussia, takes the liberty to send to your lordship, and to the committee of the Royal Society, the first and second annual reports and transactions of the Prussian Society.

"The high merits of the Irish Society for the improvement of this important branch of production, and especially its persevering and successful efforts to improve the quality of the fibre of flax, are recognised by the whole world, and particularly in our own country, where the production of flax is native since many centuries. We have great satisfaction to congratulate your lordship and the committee upon the success which has attended your interesting and useful labours.

"Our Society is much indebted for all the instructions which we have received by your annual reports, and I take the liberty to beg you to favour us with some copies of the report of this year when it has appeared.—I remain, my lord, your most obedient servant,

"GEORGE VON VIEBAHN.

"Berlin, 15th Oct., 1852."

His lordship proceeded to say that he took it for granted the Society would authorise the secretary to write a suitable acknowledgment of that very flattering testimonial; also, to send copies of the report when printed, and to afford every information which was in the possession of the Society. (Hear, hear.) He would now call on the secretary to read the annual report.

The SECRETARY, before proceeding to read the report, said that, owing to the opening of the parliamentary session, which was to take place yesterday, this meeting of the Society was deprived of the presence of several of its influential members—among others, the Earls of Erne and Enniskillen, Lord Clermont, Lord de Ros, Sir R. A. Ferguson, Bart., M.P., E. B. Roche, Esq., M.P., &c. He had received letters from these, and from Sir Robert Kane, and others, regretting their inability to be present, and expressing their continued interest in the progress of the Society. Mr. MacAdam then read the report, which was as follows:—

"TWELFTH ANNUAL REPORT OF THE COMMITTEE TO THE ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

"In obedience to the rules of the Society, its members have been again summoned to receive from the committee the annual report of their proceedings during the past twelve months.

"GOVERNMENT AID.

"You are aware that, since the year 1847, the late Government, sensible of the importance of extending the cultivation of flax to the South and West of Ireland, had placed at the Society's disposal a sum of £1,000 per annum, derived from a special fund placed under their control, by the Act 11th and 12th Vic., chap. 115, and applicable for industrial purposes solely to certain counties of the provinces of Munster and Connaught. To the late Lord Lieutenant the Society was chiefly indebted for this timely and judicious aid; and on the occasion of his leaving Ireland, your committee presented him with an address, expressive of regret at his departure, and of their gratitude for the extent to which the Society had participated in his wise policy of employing the people of this country by the development of its natural resources.

"On the advent of the present Ministry to power your committee deemed it requisite to lay fully before the Lord Lieutenant, and subsequently before the Premier, by deputation, the value of flax culture, as a source of national wealth, pointing out the extent to which it could be increased in those districts where the crop was a novelty. The weight of these representations was fully admitted by the distinguished individuals to whom they were addressed; and the sum of £1,000 was placed by them in your committee's hands, for the instruction of the growers in the districts referred to. On the occasion of the present Lord Lieutenant's visit to Belfast, an address, on the part of the Society, was presented to him, and, in his reply, his Excellency reiterated his sense of the advantages which must continue to accrue to this country from the Society's labours.

"OPERATIONS OF THE YEAR.

"Seventeen of the Society's Instructors were employed during the year in districts of the Counties of Donegal, Londonderry, Antrim, Armagh, Tyrone, Fermanagh, Louth, Longford, Westmeath, King's and Queen's Counties, Kilkenny, Wexford, Cork, Clare, Limerick, Tipperary, Waterford, Galway, Mayo, Sligo, Leitrim, and Roscommon. Their duties consisted in instructing flax-growers in the selection and preparation of the soil, in sowing, pulling, saving the straw, steeping, grassing, and saving the seed. In a few cases, also, their attention was incidentally given to the establishment of scutch-mills, the training of scutchers, and imparting information on the erection of oil-mills. In the districts under the instructors' charge, the flax crop has been unusually well saved, favoured by a very fine and remarkably early season.

"EXPORTS OF IRISH FLAX AND IMPORTS OF FOREIGN.

"Owing to the large quantity of flax grown in Ireland last year, the export has been more considerable than in perhaps, any previous year. From the commencement of the season when the supply comes to market up to the appearance at market of the present year's crop, there were exported from Belfast 5,197 tons of flax, value £233,775. Of this quantity 4,134 tons were shipped to Great Britain, and 1,063 tons to France. In 1850, the entire quantity exported was 1,457 tons, and in 1851, 4,010 tons. The extent to which France has supplied herself from Ireland is a fact of much significance and of great promise. In 1850, there were shipped to France 107 tons; in 1851, 436 tons; and this year, up to the present date, 1,048 tons. Some years since, when your committee expressed an opinion that, as the growth of flax increased in Ireland it would not only replace a large proportion of the foreign import; but that, from its good quality and value, it would likely find a ready market in other linen manufacturing countries, this opinion was by many considered erroneous. The result, however, has amply proved the correctness of the views then put forward, and there can be little doubt, if the growth in Ireland continues to increase, that our country will obtain a large share in that export trade in flax, of which Russia has for so long a period possessed almost a monopoly.

"In evidence of the extent to which the increased supply of Irish flax has affected the import, into British and Irish ports, from foreign countries, your committee refer to the returns of the Board of Trade, which shew the entire import for 1851 to be 59,709 tons, while that for 1850 was 91,097 tons, being a falling off of 31,288 tons; while it further appears that the import of 1851 was 7,659 tons less than that of 1841, although in the interval the increase of machinery in the United Kingdom, for the spinning of flax, was equal to an increased annual consumption of about 18,000 tons of the raw material.

"CROP OF 1852.

"The agricultural statistics of Ireland, for the present year, are at present in course of collection, and the Lord Lieutenant has promised that, as soon as practicable, a note of the breadth of land under flax shall be furnished to the Society. From the uncertainty of other data for estimating the quantity sown, your committee have not deemed it advisable to make up any calculations, as they hope, before long, to present to the public the official returns. In some districts they understand that there is a considerable increase over last year, while in others the quantity grown is less. In several localities of the South and West, they have reason to believe that a considerably smaller breadth has been cultivated. This has arisen from the inconsiderate way in which the culture was commenced last year, without any thought being given by the growers to the extent of local facilities for the sale of the straw, or for its conversion into fibre. Your committee did their best to regulate the growth, in these new districts, by the local means of turning the crop into money; but in many cases their advice was disregarded, owing to advertisements having appeared in the Southern papers, from parties who offered to buy any quantity of straw, for conversion into flax-cotton, or other fibrous material. When the crop arrived at maturity, these buyers were either not to be found or declined to purchase, and consequently much straw was left on the growers' hands, and they became disheartened. Your committee never omit to impress upon intending flax-growers, that their first trial should be on a small scale, and that they should, at least, secure the erection of scutch-mills, or the location of purchasers in the straw in their vicinity, before embarking largely in the culture of the crop.

"SCHENCK'S STEEPING SYSTEM.

"In last annual report, it was stated that the patented method of steeping flax in hot water was in operation in eighteen concerns in different parts of Ireland. Since then, three other concerns have been established, but three of those formerly organised have ceased working. Last year your committee referred to the complaints that had been made, by spinners, of the strength and quality of the fibre retted on this plan, and, at the same time, expressed their belief that the principle was sound, and that, by certain modifications in the details of watering, an article could be produced which would be free from the faults attributed. They see no reason for altering this opinion, as they find that, in the retteries established in England and Scotland, fibre of excellent quality, strength, and cleanness is produced. The superiority of the article made in those retteries suggested the propriety of inquiring into the methods there employed in carrying out Schenck's patent. Mr. Haslett, the Society's Head Instructor, was, therefore, deputed to visit them, to examine into their plans of working, and to report upon the subject for the information of Irish retters. From his report it appears, that the primary cause of the superiority in their system of working must be sought in the quality of the flax straw they procure, and the care with which it has been saved and dried; and that several plans are carried out by which the fibre is cleansed from impurities, and becomes much improved in strength and colour. Your committee are aware that the difficulties and disappointments which have hitherto attended several of the attempts to carry out Schenck's system in Ireland have caused some persons to blame them for having expressed so high an opinion of this method for preparing flax fibre. In reply to these remarks, they have now to say, that their investigation of Schenck's process was conducted with the most painstaking and cautious scrutiny, and that, after more than a year's trial, from the facts ascertained in the results of experiments made both by their sub-committee and by other disinterested parties at home and abroad, it was impossible for them to make any other report, or to come to any other conclusion, than those they put forward in 1850. Every one who has instituted experiments with a view to ascertain the value of novel processes in the industrial arts must be aware that, however promising the results, they often afford no criterion of success in carrying out such processes on an extensive scale; and your committee, while then expressing the sanguine opinion on Schenck's system, which was warranted by facts ascertained by themselves or communicated to them, at the same time carefully abstained from involving themselves in responsibility by giving any estimate of profit on the commercial working of the patent. That flax can be prepared in this manner, of a quality suitable to the general purposes of the linen manufacture, they see ample reason for continuing to maintain. The profits of those who commercially engage in it must depend upon the price they pay for the straw, their skill in putting a right value on its various qualities, the state in which it is finished by the growers, the care and skill devoted to the details of working, and the economy of labour throughout. In the conduct of a scientific operation, such as hot-water rating, persons capable of such superintendence as would be given to any other chemical process are required; and much of the want of success in Ireland, in carrying out the details of Schenck's system, may be attributed to the absence of such superintendence.

"UNSTEEPED FLAX.

"In their last report, your committee adverted to the projects for separating the fibre from flax straw, without steeping; and while they pointed out that from straw of fair quality a much more profitable material could be obtained by the ordinary processes, they suggested that when the quality of the plant is so inferior as scarcely to defray the expense of the usual mode of treatment, the fibre might be separated mechanically, and converted to uses for which hemp and other coarse fibrous substances are now largely employed. Several machines have been invented for accomplishing this separation, and some trials are now being made in different parts of the country, from whose results a more definite opinion on the subject may soon be formed. It has been stated that, by the use of the old implement named the *clove*, the dry fibre may be separated effectually, and with economy.

"FLAX COTTON.

"From the moment that M. Claussen's invention was made public, your committee felt it their imperative duty to point out the errors and defects which were inherent to the plan as originally propounded. They showed that, to propose converting into a substance to compete with the lower qualities of cotton at 3d. or 4d. per lb., a fibre which, as prepared for the linen manufacture, is worth, on an average, 5d. to 6d. and often brings 9d. to 1s., was fatally unsound; and they suggested that the inventor should confine himself to the treatment of the refuse fibre of flax, in the form of scutching-tow and mill, or carding, waste. Notwithstanding the abuse which was lavished upon the Society for this expression of their opinion, by the inventor, and that portion of the London press which advocated his views, he, in the end, recognised the soundness of their advice, and has since professed to confine himself to the conversion of those coarse materials into flax cotton. The official investigation conducted at Kildinan by Sir R. Kane, assisted by Professor Hodges, a member of your committee—and by other chemists, effected no definite result; but from their report made to Government, which has been lately published, it appears to have been ascertained that the fibre prepared by M

Claussen's process does not at all produce a material approaching in structure or organic quality to cotton, and that this point as to structural character is fundamental to the value and quality of flax cotton.

"For some time past there appears to be a lull in the agitation of this project, whose real claims to public support, will doubtless, be developed in the course of the practical carrying out of the system; but your committee would, nevertheless, reiterate its former cautions in adverting to the fact, that while no manufacturer who has used the article has confirmed the assertions of interested parties on its actual merits as a textile substance, several who have tried it have declared the failure of their experiments and their consequent abandonment of its use.

"NEW METHODS OF PREPARING FLAX.

"An unusual number of new plans for obtaining flax fibre from the straw, have lately been brought forward, and your committee have inquired into each with great attention. Some are, as yet, not in a position to be openly shewn, while others have apparently been abandoned by the inventors. The most interesting point in connexion with those which still maintain the confidence of their projectors, is the alleged possibility of producing good fibre, at small cost, without the fermentation or complete decomposition of the gum and cuticle. Different means of macerating the straw, are employed by the different individuals who have promulgated this novel principle; but all adopt the plan of crushing the macerated stems between heavy metal rollers, which appears to produce a very peculiar and satisfactory result, in freeing the fibre from foreign matters.

"The most prominent of these new inventions is that of Mr. Watt, which has been put into practical operation at Belfast, by Messrs. J. Leadbetter & Co. The maceration is, in this case, effected by steam; the saturated straw is crushed between rollers, dried by artificial heat, and scutched. As soon as it had been ascertained that these processes were in a state to be exhibited, and that Mr. Watt and Messrs. Leadbetter were quite willing they should be searchingly examined, a meeting was summoned, not confined to members of your committee, but including other individuals interested in the flax trade, and arrangements were made for carrying out an experimental trial, under their close personal supervision. This trial was to embrace the entire series of processes employed in the conversion of the straw into fibre, and the testing of the spinning qualities of the latter, by hackling, spinning, and boiling the yarn. The report of these investigations will be laid before this meeting, and your committee, in the present stage of experience, deem it most prudent not to pronounce any decided opinion as to the merits of Mr. Watt's invention, but would, at the same time, venture to express a hope, warranted by the facts already ascertained, that much public advantage may accrue from it. They earnestly recommend that all who are interested in the improvement and extension of flax production should closely watch the results which experience in the commercial working of this invention shall develope.

"SCUTCH-MILLS.

"From the very formation of the Society, in 1841, its attention has been unceasingly directed to the existing state of the machinery employed for scutching flax, and to plans for its improvement. In no part of the Irish flax growing and preparing system have there been such grave defects. In a great number of the Irish scutch-mills the machinery is of the most primitive construction; and in place of the farmer receiving from them the full produce of his straw, a large proportion of the fibre is torn away in the operation, and converted into scutching tow, an article worth but a tenth part of the value of marketable flax. Your committee, by offering large prizes in 1841, for improved machines, and by a careful scrutiny into the merits of every invention since brought forward, have endeavoured to change this unsatisfactory state of things. They have, to a certain extent, been successful, and considerable ameliorations in the breaking and scutching departments have since been widely adopted. Many landed proprietors have erected scutch-mills, containing the most recently improved machinery, where their tenants have been able to get their flax prepared at the same cost as in the most inferior mills; and in numerous instances their establishment has forced upon the owners of the old concerns a re-modelling of their machinery, to meet the wholesome competition thus created. Another beneficial change, which is yearly becoming more widely adapted, is the substitution of steam for water, as the motive power for scutch-mills. The woody refuse of the flax stems supplies fuel at nominal cost; and the advantages of steam are apparent, both in the regularity of working and in the avoidance of those periods of enforced stoppage, arising from scarcity of water, which, in the midst of the scutching season, have been productive of much inconvenience both to the producers and the consumers of flax.

"But, while inefficient machinery is the great and prominent evil, scarcely less disadvantage has arisen from the system of scutch-mill labour. To convert an ordinary labourer into an expert scutcher, much training is required, and, in proportion to the skill of the individual, is the maximum of work and the mininum of waste. As it naturally happens that a large proportion of the scutchers are comparatively inexpert, the expense of the operation is generally greater, and the yield of fibre less than would otherwise be the case. In consequence, also, of the system prevailing in most mills of paying the hands by the piece, a great loss of fibre occurs, as they are anxious to get through a large quantity of work, without caring for the waste caused by hurried manipulation. In addition to this, the rapid increase of flax culture, and the scarcity of trained scutchers, have caused so great a demand for the latter, that they have become, as a class, greatly demoralised, and their services not to be reckoned upon at an emergency.

"Taking into account the two great defects referred to—viz., inefficient machinery and a faulty system of working—your committee believe themselves within the mark when they state that the yield of fibre from the straw is, on an average, at least 4lbs. per cwt. less than it might be. This, on the quantity of flax grown, would amount to 1,100 tons of fibre; and after allowing for the value of the waste as scutching tow, the loss to the grower would amount to nearly £40,000.

"It is with anxiety, therefore, that they have looked for machines of such construction as to clean the fibre thoroughly, and to dispense with the necessity for skilled labour. Three separate machines have been lately brought under their notice, the inventors of all of which profess to have met these desiderata. Your committee are preparing to test the actual and comparative merits of each machine, its economy in labour, yield in fibre, and all other points of importance. When this has been done, the results shall be made public; and there are grounds for believing that a sweeping change may be soon brought about in the whole scutching system, and great improvements carried into effect.

"SCUTCH-MILLS ACT.

"Since 1850, the attention of the late Government was several times called by your committee to the importance of extending the provisions of the Land Improvement Advances (Ireland) Act, so as to include, in the farm buildings clause, buildings for scutching flax. It was represented that many landed proprietors, on whose properties flax was about to be cultivated, were desirous of erecting mills in which their tenants' flax could be prepared for market, and that they would at once avail themselves of the power of borrowing from the Treasury, for this purpose, on the conditions under which they obtained advances for drainage, &c. Although the late Lord Lieutenant and the Board of Works both reported in favour of this plan, your Committee were unable to prevail on the late Chancellor of the Exchequer to accede to it. It is with much satisfaction, therefore, that they have to allude to the Act passed during last session of Parliament, extending the provisions of the Land Improvement Act to buildings for scutch-mills, and to weirs and water-courses for providing the same with water-power. They anticipate that this Act will be extensively made available, and that it will tend to the erection of scutch-mills in many new flax-growing districts. They feel called upon to direct your attention to the prompt manner in which Lord Naas, Chief Secretary for Ireland, brought the matter before the Legislature, and would, incidentally, record their appreciation of the desire which he has manifested, since his accession to office, to further the objects of the Society. Since the passing of the Act, a correspondence has been entered into with the Board of Works, and, at their request, plans and specifications of improved scutch-mills have been procured for their information and guidance.

"FLAX MARKETS IN THE SOUTH AND WEST.

"While pointing out to the proprietors and occupiers of land, in new flax-growing districts, the facilities of communication with Belfast, from most parts of Ireland, by railroad and steam-boat, and the very short distance which Irish flax has to traverse to reach the seats of manufacture, as compared with the produce of Belgium, Holland, and Russia, your Committee have felt it incumbent upon them to afford every facility in their power to remote growers for the disposal of their flax. They have been in correspondence with several persons in the South and West of Ireland, as well as with some of the leading spinners of Ulster, and have, in consequence, under consideration a plan by which days shall be named for the holding of flax markets in certain large towns of the South and West, at which buyers shall attend on the part of the spinners, and purchase all that may be brought forward, at the current rates of the day. They believe that this plan, while affording a great facility to farmers for the disposal of their flax, will practically shew the most ignorant that there is a demand for the article, and will thus encourage many to grow it, whom the want of local markets might otherwise deter.

"SAVING OF FLAXSEED.

"In accordance with the views on this point which the Society has always entertained, your committee made strenuous efforts, this year, to induce farmers to avoid, by saving the seed of their flax crop, the shameful waste which the latter conceive hallowed by long practice. Six thousand copies of instructions for saving, with notes upon the value of the seed, both if sold at the oil mills, and as food for live stock, were distributed among the tenantry of the Society's members and through the secretaries of local farming societies. The instructors were also directed to urge it by every means in their power, and to combat the prejudices which exist against it. Yet, although there is reason to believe that these representations have produced some effect, it is to be observed, with great regret, that no decided change has occurred, and that, as usual, fully £300,000 of national wealth was again, this year, lost in the steep-pools. It has almost in vain been shewn that, in every flax-growing country in the world, with the exception of Ireland, the saving of the seed is the general rule, and the loss of it the rare exception; that in America 50,000 acres of flax are annually grown for the seed alone, while the straw is used for thatch or litter; that in India large breadths of this crop are cultivated, the seed of which is exported to England and the United States, while of the fibre no use is made; and that the United Kingdom pays annually for foreign flaxseed, and oilcakes made from it, nearly £2,000,000, a great portion of which large sum might be put in the pockets of Irish farmers. Still, the fact, that around Belfast—the only place where immediate sale can be obtained for seed—the quantity sold to the oil mills is every year increasing, would appear to indicate that, were local facilities for the sale of the article to be provided in the market towns of Ulster, a considerable proportion would be saved. Your committee believe this subject to be well worthy the attention of grain-dealers and others, who could afford to pay the farmer a remunerative price for his flaxseed, and realise a good profit upon it in Belfast, Liverpool, or any other seat of oil-milling. The value of flaxseed for rearing and fattening the animals of the farm has been frequently pointed out, and ond it is believed that its employment for this purpose would be more profitable to growers than its sale. Attention has latterly been called to the advantage of establishing small oil mills in flax growing districts. In the Low Countries, Denmark, and the German States on the Baltic, such mills are very numerous, and the Society's Belgian Instructor, who is conversant with their construction, has, incidentally to his other duties, recommended the adoption of this system in several localities. The progress of farming on scientific principles, is demonstrating the profit to be derived from the fattening of live stock; and as oilcake is largely employed in the system most approved of, the establishment of such mills would be a useful step to the adoption of the practice of English and Scotch agriculturists.

"INDUSTRIAL EXHIBITIONS.

"The importance of public exhibitions of raw produce and manufactured articles, in directing attention to national resources, in stimulating improvement, and in opening new channels for the great current of trade, induced your committee to send to the Great Exhibition of 1851, a series of specimens, illustrative of the growth and preparation of flax in Ireland. For these the high distinction of a Council Medal was gained by the Society, 'whose entire collection,' to quote the jury's report, 'is highly valuable, and clearly illustrates the great advances which have already been made, and the important service which this Society has already rendered the country. The jury believe that the rapid and progressive advance which, during the last dozen years, has been made in the cultivation of flax in Ireland, is mainly, if not entirely, due to the exertions and influence of this valuable institution.'

"A similar series of specimens was, this year, sent to the Cork Exhibition, where they attracted much attention from the numerous individuals now interested in introducing flax culture through the South of Ireland; and your secretary, during the period of the Exhibition, delivered a lecture on the growth and manufacture of flax, being one of the course instituted for the purpose of illustrating the Exhibition, and rendering its chief features more practically useful. One of the cases shewn at Cork was presented, on the part of the Society, to the Government Museum of Irish Industry, and the other to the Royal Dublin Society's Agricultural Museum, where they will be valuable for reference and instruction.

"SCIENTIFIC RESEARCHES.

"The great interest attached to the improvement of flax processes has latterly directed the attention of scientific men, both in our own and in foreign countries, to the careful investigation of this subject. Different analyses have been made public by chemists of eminence, which have aided in elucidating some of the points hitherto unascertained. As there is still much to be done in this department, your committee lately voted a sum, not exceeding £30, to be applied, under the direction of a sub-committee, by Professor Hodges, to further analyses. At the recent meeting of the British Association in Belfast, the subject was assigned a prominence correlative with its intrinsic importance, and with the interest attached to it in the locality of the meeting. Several papers were read in the sections bearing upon the question, and a further sum of £20 was voted by that learned body, for further analyses by Professor Hodges. It is to be hoped that these, when carried out, will be valuable in clearing up obscure points, and suggestive of further improvements in the processes.

"FLAX-GROWING ABROAD.

"Your committee have had frequent occasion to allude, in former reports, to the interest which the Society's labours have excited in foreign flax-growing countries, and they have, from the first, adhered to the principle of courtously and freely communicating the information they had obtained to all who sought it. They feel that a narrower policy would ultimately prove futile in preventing foreigners from obtaining such information; and, grateful for the valuable assistance frequently rendered them by flax-growers on the Continent, they have unhesitatingly complied with all requests of this nature. The natural advantages possessed by Ireland, for the production of this great raw material of textile industry, render them fearless of competition; they consider that much benefit must accrue from a wholesome and honourable emulation; and they are confident that the more attention that is paid throughout the world to the improvement of flax culture and preparation, the better will the interests of the linen manufacture be advanced, by the improvement of the fabric, and the consequent increase of its consumption.

"CONCLUSION.

"Each successive year of the Society's existence has added to its stock of experience, and increased its means of usefulness. The existence of an influential public body, devoting itself to the investigation of a limited range of subjects, necessarily attracts to it those who have applied themselves to researches bearing upon the points with which it deals. To examine into the real merits of new inventions, demands at the same time knowledge, experience, and impartiality. The constitution of the Society insures the latter, and its twelve years' labours imply the other two. Important discoveries, which, if left to themselves, would be slow in making their way, and uncertain in their immediate results, are, through its means, at once examined, their comparative advantages made widely public, and their defects soon ascertained by practice. Your committee have not, for a moment, lost sight of the grave responsibility which rests upon them as the executive of the Society; they have pronounced upon each point brought under their notice as they conceived themselves warranted by the ascertained facts, and have then left the public to decide upon their recommendations. In endeavouring to extend throughout Ireland a department of agriculture which has contributed so much to the well-being of its Northern province, they have had difficulties to contend with which can only be appreciated by those who have aimed at the introduction of a novel system, aggravated by the social peculiarities which render such efforts, in many parts of this country, so unusually difficult and so slowly successful. Prejudice, ignorance, and apathy, want of perseverance and of self-reliance, are the foes with which they have found it most hard to contend. Nevertheless, they have laboured on, and the progress they have already made has been, taking into consideration the many obstacles in their path, greater than they could in the beginning have anticipated. If it be but the first step which costs, they may fairly look forward to a more rapid progression. Flax culture has now been commenced in sixteen counties beyond the bounds of Ulster; and although in those localities its extent is, as yet, trifling in comparison with that province, and taking into consideration the natural capabilities of the others, there are ample reasons for believing that, year by year, it will progress, until it reaches the amount required for the aliment of the linen manufacture of the United

Kingdom, and affords a surplus for export to other linen manufacturing States. To this great end the Society has been patiently and perseveringly labouring. The first instalments of its reward have already been realised, and that reward will, it is to be hoped, be fully attained, in the adoption of flax culture as a permanent item in the whole system of Irish agriculture, and in the consequent profit, employment, and habits of patient and skilful industry which it must create."

The annual statement of accounts shewed, on the debit side, a balance in hands since last November of £28 2s. 10d; a receipt of £2,000 from the Government, being the grants to the Society for 1851 and 1852; £312 9s. paid in of the subscriptions of the year, leaving £171 1s. yet to be collected; £1 3s. 6d. for accidental receipts—total, £2,341 15s. 4d. The credit side shewed an expenditure of £1,479 3s. 5d.; a sum of £584 14s. 11d. repaid the Belfast Bank for advances against the grant of 1851; and £277 16s. 8d. balance on hands.

Sir JAMES M. STRONGE, Bart., moved the first resolution. He said—My lords and gentlemen, the report which has just been read is so clear and satisfactory, and contains so much useful and instructive matter, that I do not feel any desire to occupy your attention by making any observations. I shall, therefore, content myself by moving the resolution.

The Rev. J. GREY PORTER seconded the motion. He said—I fear it becomes my duty to state to your lordship, that the Secretary has made a great mistake in calling on me to second the resolution; for though, of course, I do it with great pleasure, I regret I am totally unprepared to lay any information before you of a valuable character. When I received the summons to attend your meeting, I immediately secured a seat in the Enniskillen mail; but it was my object simply to sit here and get information from others. I may, however, now give this meeting my assurance, that, though a distinguished senator lately, in Belfast (Mr. Bright), took the liberty of discussing the character of one of our (County Fermanagh) landlords, of which, by the way, he was quite uninformed, there are no people in the North more ready than we are to receive suggestions and information from the Flax Society. I may state, that I was one of the first to build a scutch-mill in my part of the country; but this has been followed by two other such buildings; and the fact now is, that there is more flax grown with us than the mills are able to work. There are many topics in the report which it is not possible for me to dilate on; but I beg to take the liberty of suggesting to your lordship and the gentlemen present, if it would not be worth considering (for we must regard the Flax Society as a national institution) whether it would not be desirable to present a petition to the Chancellor of the Exchequer to grant a small sum to this society for the purpose of enabling it to make experiments on new projects, with a view to the guidance of the public.

The CHAIRMAN—The Government give us £1,000 annually, and I think we could scarcely ask them for more.

Rev. Mr. PORTER—That is a particular grant: but I think we might ask for a small sum for the purpose I have indicated. We have a Government now in power which is, I believe, disposed to benefit Ireland. I believe the present Government is desirous of doing good; and if you could get, say £100 from it, to enable this Society to make a few experiments, and to test the value of improvements, you will do much for us who live at a distance from this enlightened town, and who cannot form a correct opinion in the absence of experiments. Every day we see things in the papers, purporting to be great improvements; but so many of them have failed, that really we in the country dread to repose faith in any of them. If, therefore, there were a small sum at your disposal, you could get your instructors—very able men, indeed—to examine the various improvements announced, and to report on them; that they might also be able to lay before the Government correct particulars respecting our mills and the machinery in them. I believe all Continental Governments obtain this information; and no doubt find it of great use. Therefore, I hope the present Government will in the present state of Ireland, see what should be done to promote this great national undertaking. (Hear, hear.) The reverend gentleman concluded by apologising for the length of his remarks, which were wholly unprepared, and seconding the resolution.

The resolution was put from the chair and carried.

The Bishop of Down and Connnor and Dromore next rose, and moved the second resolution—which was expressive of the thanks of the meeting to the Premier, the Lord Lieutenant, and the Chief Secretary, for the aid they granted to the Society. His lordship said—I do not think that this resolution will be regarded by any one merely as a matter of form, but as a grateful recognition on our part, of the deep interest which her Majesty's present advisers take in the prosperity and extension of this Society. In proof of this, I may only state, that the noble earl who presides over the Government of the empire declared, that of the many deputations which had waited on him, he received none with more satisfaction and pleasure than the deputation which was sent from the Royal Flax Society—(hear)—as he looked upon it as a Society which had for its aim the amelioration of the country, by teaching the farmer a most profitable means of developing the resources of the land. (Hear, hear.) I am aware this is felt by the Lord Lieutenant also. When, last year, I had the honour of moving a similar resolution to the nobleman who then presided over Irish affairs, I may be excused if I add, that my remarks on that occasion were influenced somewhat by a personal feeling; but, on the present occasion, I would not be doing justice to myself and my convictions if I did not give the fullest credit to the present Lord Lieutenant, and state that I believe him to be actuated by the best intentions towards this country—namely, a sincere and honest desire to give us peace and prosperity. (Hear, hear.) With this view, I beg to move the thanks of the meeting to the Premier, the Lord Lieutenant, and the Chief Secretary for Ireland, for the continuance of the aid from Government to this Society.

Thomas Greg, Esq., seconded the motion.

The Chairman then put it, and it was carried unanimously.

"REPORT OF THE COMMITTEE APPOINTED TO INSTITUTE AN EXPERIMENTAL TRIAL ON MR. WATT'S SYSTEM OF PREPARING FLAX FIBRE FROM THE STRAW.

Mr. Niven, Esq., then handed in the following report, which was read by the chairman:—

"Since attention was first directed to the improvement and extension of flax cultivation in Ireland, and an association formed in Belfast, in the year 1841, to endeavour to accomplish these ends, it has been evident that a great desideratum in the treatment of flax, in order to obtain a fibre of good and even quality, suited for manufacture, was the adoption of some plan by which uniformity could be arrived at, and the waste and loss arising from the imperfections of the system generally practised by individual growers obviated.

"In order to attain this end, it appeared requisite that a division of labour should be carried out, that that the farmer should be merely the grower of the plant, and that persons of capital, education, and scientific skill should purchase it from him, and convert it by some effective process into marketable fibre.

"Every project, having this end in view, has, consequently, met with great attention from the Royal Flax Society and the public; and a plan, embodying points of great novelty, having been lately brought forward by Mr. Watt, and put in operation at Belfast, a meeting of those interested in the matter was held on 2d October, at which the inventor was present, when it was arranged that a careful examination into the processes employed should be made by a committee then appointed.

"The trial was begun on 21st December; and although all the points desirable to be ascertained have not yet been fully investigated, the committee are in a position to report to this meeting a number of facts already ascertained, which they consider of interest and importance.

"Mr. Watt's system may be briefly described as follows:—The flax straw is delivered at the works by the grower, in a dry state, with the seed on. The seed is separated by metal rollers, and afterwards cleaned by fanners. The straw is then placed in close chambers, with the exception of two doors, which serve the purpose of putting in and discharging the straw; the top, which is of cast iron, serves the double purpose of a top and condenser. The straw is then laid on a perforated false bottom of iron, and the doors being closed and made tight by means of screws, steam is driven in by a pipe round the chamber and between the bottoms, and penetrating the mass, at first removes certain volatile oils contained in the plant, and then is condensed on the bottom of the iron tank, descending in a continuous shower of condensed water, saturating the straw, and forming, in fact, a decoction of the extractive matters which connect the fibrous and non-fibrous portions of the plant. This liquid is drawn off from time to time, and the more concentrated portions are used for feeding; the process is shortened by using a pump, or such arrangement as will repeatedly wash the mass, with the water allowed to accumulate. In about 8 to 12 hours, varying with the nature of the straw, it is removed from the chambers, and having been robbed of its extractive matter without decomposition, it is then passed through rollers for the purpose of removing the epidermis or outer skin of the plant, of discharging the greater part of the water contained in the saturated straw, and, while in the wet and swollen state, splitting it up longitudinally. The straw being free of all products of decomposition, is then easily dried, and is in a few hours ready for scutching.

"In the experimental trial, personally superintended, throughout all its details, by the committee, a quantity of flax straw, of ordinary quality, was taken from the bulk of the stock at the works, weighing 13¾ cwts. with the seed on. After the removal of the seed, which, on being cleaned thoroughly from the chaff, measured 8¾ imperial bushels, the straw was reduced in weight to 10 cwt. 1 qr. 21 lbs. It was then placed in the vat, where it was subjected to the steaming processes, for about eleven hours. After steeping, wet-rolling, and drying, it weighed 7 cwt. 0qrs. 11 lbs; and on being scutched, the yield was 187 lbs. of flax; and of scutching tow, 12 lbs. 6½ ozs. fine, and 35 lbs. 3 ozs. coarse. The yield of fibre, in the state of good flax, was, therefore, at the rate of 13½ lbs. from the cwt. of straw with seed on; 18 lbs. from the cwt. of straw without seed; 26½ lbs. from the cwt. of steeped and dried straw.

"The time occupied in actual labour, in the processes, from the seeding of the flax to the commencement of the scutching, was 13½ hours, to which, if 11 hours be added for the time the flax was in the vat, 24½ hours would be the time required up to this point. The scutching, by four stands, occupied six hours sixteen minutes. But, in this statement, the time required for drying is not included, as, owing to some derangement in the apparatus, no certain estimate could be made of the actual time required in that process. It would appear, however, that about thirty-six hours would include the time necessary, in a well-organized establishment, to convert flax straw into fibre for the spinner.

"The cost of all these operations, in the experiment, leaving out the drying, for the reasons noted, appeared to be under £10 per ton of clean fibre, for labour, exclusive of general expenses.

"A portion of the fibre was sent to two spinning-mills to be hackled, and to have a value put upon it. The valuation of the samples varied from £56 to £70 per ton, according to the quality of the stricks of fibre sent, and the yield on the hackle was considered quite satisfactory.

"On the results of this experiment, which was necessarily of a limited nature, the committee think it best to offer no general remarks. They are sufficiently favourable to speak for themselves. It remains to be ascertained whether the qualities of flax fibre, prepared by this method, are such as to suit the spinner and manufacturer. They have been informed by a spinner who has been trying some flax prepared by Mr. Watt's system, that the yarn made from it appears equal in all respects to what is ordinarily spun from good Irish flax, of the finer sorts. They believe that, before long, information will be given by several individuals who are about to carry out more extended trials on the spinning and manufacturing departments.

"The committee conceive that the most prominent and novel feature of this plan consists in the substitution of maceration, or softening, for fermentation. In the steeping of flax, both in cold and hot water, the fibre is freed from the substance termed gum, by the decomposition of the latter; while in Watt's system the maceration of the stem loosens the cuticle and gum, which are further separated mechanically in the crushing operation, and, after the drying of the straw, readily part with the wood, under the action of the scutch-mill. Before concluding this statement, the committee wish to call attention to a very curious feature in Mr. Watt's invention. The water from the vats, in place of being offensive and noxious, as is the case with ordinary steep water, contains a certain amount of nutritive matter. This arises from its being an infusion of the flax stems, in place of holding in suspension or solution the products of the decomposition of the gum, and other substances contained in the stems. The inventor is now employing this water, along with the chaff of the seed-bolls, for feeding pigs. It is of much interest, therefore, to note in how far this may be found practically to answer, as, between the seed, the chaff, and the water, by far the greatest portion of what the flax plant abstracts from the soil would thus be returned in the shape of manure. However this may turn out, the avoidance of all nuisance in smell, and of the poisonous liquid which causes some damage among fish when let off into rivers, is a matter of some consequence.

"Appended to this report is a note of the time occupied in the different processes during the experiment, and of the number of persons employed in each.

"It is to be hoped that so promising a plan may, on more extended experience, be found fully to warrant the high anticipations formed from what is already known concerning it.

("Signed on behalf of the committee),

"RICHARD NIVEN, Chairman.

"Belfast, 3d November, 1852."

"APPENDIX.

"Note of the time occupied, and of the number of persons employed in each of the processes witnessed by the committee, on the experimental trial of Mr. Watt's system of preparing flax fibre:—

	No. of persons employed.		Time occupied.	
	Men.	Women and Boys.	Hours.	Minutes.
Seeding,	4	8	1	15
Placing in Vat,	3	4	0	15
Cleaning Seed,	1	0	3	0
Taking out of Vat,	2	3	0	30
Wet-rolling and putting in drying-room,	1	16	2	20
Rolling for Scutching,	0	11	1	8
Stricking for do.	0	7	4	47
Total,	11	49	13	15
Scutching,	4	0	6	16

John Preston, Esq., observed, in reference to the report, that he had forwarded parcels of this flax to the Mile Water Spinning Company; and had that morning received a letter from them, which he read as follows:—

"Mile Water Mill, Belfast, 4th Nov., 1852.

Gentlemen,—We have received from you the flax which had undergone the process under "Watt's Patent." We have carefully examined the article submitted to us, and find it to contain three qualities which we value as follows, viz:—The lot marked No. 2 s., £65 per ton; that marked s.s. 3, £70 per ton; and that marked M. No. 1, £75 per ton.

We have had the flax dressed in precisely the same manner as that for all our warp yarns, and find it to work remarkably well both as to yield and quality. For your satisfaction, we therefore place before you the above results of our experiments on the samples forwarded by you to this establishment. You will please observe, that, in preparing the flax for superior yarns more than ordinary dressing is required, and the yield for this description will be 10 to 15 per cent. less than ordinary yarns. We may remark, that, as far as we have experimented on the flax in question, it certainly contains both good quality and colour, and assimilates very closely to Flemish, being perhaps, a little stronger. We feel pretty well assured that flax thus prepared will give general satisfaction, and had time permitted, we should have tested more fully the quality of the article throughout the processes of spinning, and have had it woven in our power looms into cloth.

"We therefore conclude these remarks, by expressing a hope that the system by which flax is thus prepared may become general in this country, considering it an important acquisition in this branch of the linen business, and likely to become instrumental in encouraging the future growth of flax in this country—thereby giving a stimulus to the production of the raw material in our staple trade.—We are, gentlemen, yours respectfully,

"THE MILE WATER SPINNING COMPANY,
"*Per* JOHN ROWAN, JUN.

"*Messrs. John Preston & Co.*"

Produce of Samples of Millscutched Flax, November 4th, 1852.

No. of Mark.	Rough Flax	Middles					Ends		Total Line	Total Tow	Total Waste	Produce ℔ cwt	Value of Middles ℔ lb.	Value of Ends per lb	Value of Tow per lb	Value of Rough Flax per Ton
		7	8	9	10	11	4½	5								
	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs				
1—M	84	1	14	21	4½		4	5	49½	32½	2	65 2-7	1s 2d	7½d	3d	£75
2—S	272	11½	58	40½	3		20	13	146	120	6	60½	1s 1d	7d	3d	£65
3—S.S	162	6½	24	29½	5½	1½	10	11	88	71	3	60⅝	1s 2d	7½d	3d	£70
		6	7	8												
2—Long line	56	—	—	—					31½	23½	1	63				
		3	25½	3												

Mr. Preston laid on the table samples of the flax in question, which were minutely examined by those present.

Chairman—They appear to be splendid, indeed.

Sir **James Stronge** (to Mr. Niven) – Might there not be some contrivance by which, in the scutch-mills which are worked by steam, the spare surplus steam should be sufficient for the purpose?

Mr. NIVEN—I fear it would be slow work; for if you throw half a ton or so into a vat, it requires a large amount of steam to work upon it. Boiling water might have the effect; but I fear the steam you mean would not do.

The subject then dropped, and

JOHN BIRNEY, Esq., rose and said, that he had great pleasure in moving the next resolution. Had I (he continued), known that I would have been called on to do so, I would have come prepared to detail to the meeting a few facts, which might prove interesting. The object of the resolution I hold in my hand is to encourage and stimulate farmers to grow flax, and I believe there is no object which requires less authority to bear me out in saying, that there is no crop which can be so suitably grown in Ireland as flax. The climate is particularly favourable, and in many cases so is the soil. As a proof of what may be made out of flax, I may mention that I know, in the County Tyrone, the Irish acre of flax will produce £16 to the poor farmer. On a former occasion when I stated the value of some flax, some gentlemen thought I over-estimated the value of the acre; but, I can now state facts from my own experience. At Lisburn, opposite the station there, a field of Mr. Lucas Waring, consisting of three roods, English measure, grew potatoes one year, corn the next, and flax this year, and the value of this flax amounted to upwards of £14. I state this of my own knowledge. (Hear, hear.) Now, when three roods of flax, in the hands of one like me, produced so much profit, I think the fact ought to go forth to the public for their information, and for the purpose of stimulating practical farmers to grow more extensively. (Hear.) I feel it is a great loss to the County Tyrone, with which I am immediately acquainted, that they do not grow or prepare flax by the proper methods. I trust that the example I have set them in a small way will be of use to them and encourage them. (Hear, hear.) I sowed a rood of flax in the middle of a tenant's field; and I expect to realise by the sale, for sowing, of the seed alone, 12s or 13s a bushel. The seed they altogether let go to loss; they place no value on it. They dry their flax before the fire, incredible as it may appear, and they will not get more than 6s or 7s per stone for it. But, I expect to get 12s or 13s per bushel for the seed alone, which they sacrifice; and the price I shall get for the flax will, I have no doubt, astonish them. I have endeavoured, by precept, to induce them to follow a proper course of growing and saving flax; and I trust it will be attended with some good results to the poor people. (Hear, hear.) With these remarks, I have great pleasure in moving the resolution.

G. J. CLARKE, Esq., seconded the resolution, which was then put and carried.

A. S. ADAIR, Esq., moved the next resolution; and having done so, he said he wished to call the attention of the meeting to a portion of the annual report which had been submitted on the operations of the Society, whose aim was to foster the growth of that crop, to which, under Providence, this portion of the country was so much indebted for its prosperity. (Hear, hear, and cheers.)

He alluded to the part of the report where reference was made to the various plans which had been submitted to the public as improvements in the preparation of flax. (Hear.) In the first place, he must congratulate the Society on the very great and exceeding care which has been taken in inquiring into every project which had been submitted to the executive committee. The Society, as a public body, owed a deep responsibility to the public in return for the very general and satisfactory support it received from the country at large. With respect to the agricultural class, he thought he might say the Society had fully done its duty, (Hear, hear.) He also thought that, in procuring and collecting information so as to enable people to form a correct judgment as to the proper modes of treatment of the flax plant when taken off the ground, the public would admit the Society had done its duty. They had all heard with great interest the report read from the committee appointed to consider the worth of what he might call the latest project—that of Mr. Watt—which was now carried out by the Messrs. Leadbetter, in Belfast. It appeared to him, speaking without chemical knowledge on the subject, that the project was entitled to their attention, on the simple ground that, whereas there were plans for separating the fibre from the cuticle and the foreign substances which accompanied it, the last plan was calculated to effect, or rather to predispose the straw to an easier separation of these matters, without injuring the quality of the fibre. (Hear, hear.) And it appeared, also, that the quantity of fibre obtained from the straw was increased; so that, taken altogether, it might be said that the means adopted had been, for so far, successful. (Hear.) But, if the committee appointed, under the direction of the Society, were to limit its inspection simply to one or two, or a half dozen, modes professing to arrive at the same end, it scarcely met the expectations of the public on that point. It must be satisfactory to the meeting to hear such a detailed report as that read by the secretary, and the reasons which influenced the Society in forming their conclusions on the plan of last year; and it was further satisfactory to find that the result fully justified the reasons then set forth. Now, he would refer to Schenck's patent. It appeared to him that it was necessary that those who worked that system should possess rather a higher degree of knowledge than that ordinarily possessed by the labouring class. The old system was very simple; yet, simple even though it was, it required some judgment. How much more was now required when the connexion of science was so intimately established between the growth and preparation of the fibre for market? Therefore, he would ask the Society to turn its attention to the consideration of the supply of labour which was likely to be available for the working of any system into which they would inquire; so that the merits of such system, and its general adaptability to the circumstances of the country might be ascertained. He would next refer to Claussen's patent. On that subject the committee had reiterated the caution they gave on a former occasion; but, in accordance with the principles by which they were always governed, they did not shut their eyes either to any new project, or to any further reasons or proofs which might be urged in favour of that system. (Hear.) If Mr. Claussen's agents submitted reasons to the Society why they should change their opinion, no doubt they would do so, and report the results of their inquiries at the next annual meeting of the Society, as they did last year, and as, through the secretary, they had done on the present occasion. There was one matter which struck him with peculiar satisfaction; that was the correspondence read that day, which showed that so great was the interest felt in their proceedings, that a gentleman from the South, and another from Devonshire, had favoured them with practical communications. (Hear.) Now, with respect to the position of the flax trade apart from the linen trade, there was a matter in the report which was of the highest importance. He was not prepared for the statement made in the opening of the report, that Ireland was growing not merely flax for her own manufacture, but was now actually exporting the article to foreign countries. (Hear, hear.) This fact was, to his mind, a most satisfactory one. We knew we always were possessed of an equal amount of skill with other people; we also knew that from some atmospheric cause we possessed an advantage over every other linen-making country in the bleaching and getting-up of our linens; but we also knew that it is only a short time since we were dependent on foreign countries for the raw material in which our magnificent fabrics are elaborated. We now found that we were enabled not alone to supply ourselves, but we could supply our rivals with the raw material for their work; and, with this great fact before him, he had great pleasure in finding that the means which the Society had adopted to induce the greater growth of flax had been eminently successful. And it was further gratifying to know that the very circumstances by which this agreeable state of things had been worked out would be the means of raising up a very distressed, but deserving, portion of the people—the agricultural class. He quite agreed in that portion of the report, where it stated "The farmer should be merely the grower of the plant." This had his fullest concurrence: the farmer ought to know how to raise his crop; and then he should have a market where he could sell it in its unprepared state, leaving the further care to be bestowed upon it, to be entrusted to others who would make that department their exclusive study. Mr. Adair then concluded by moving the resolution.

Henry Anderson, Esq., seconded the motion with great pleasure and in doing so he would take the liberty of making one or two remarks on the subject before the meeting. A gentleman who moved a former resolution stated, that from three roods, English measure, a large return was realised; and he (Mr. Anderson) was able to state other results equally gratifying. They fell within his own experience, particularly on the estate which was under his charge. His son lately erected a mill with 24 scutchers; and the flax which came to the mill, its condition, where it was grown, and other particulars, were ascertained by him; and he also satisfied himself of the produce of each lot. From this he could state to that meeting that several acres had produced from £17 to £22 per acre; the flax being steeped in the usual way.

Sir James Stronge—Is it by the Irish acre?

Mr. Anderson said it was by the English acre. He stated these facts, as facts about which there could be no doubt. Of course, there would be some crops which would not be so well managed as others, and the great difficulty was the steeping process; but he feared the farmers would not adopt the new system, as it would not be easy to induce them to abandon the present steeping system, because it was so simple, and because so many members of the poor man's family could attend to it. He might also state that this year he grew twenty acres on his own farm. For ten of these acres he purchased picked Riga seed; for the other ten he got the seed from the Cregagh Flax Mills. He was told only the Riga seed would grow; but what was the fact? He could not tell the difference between the produce of the Riga seed and the Irish seed. (Hear, hear.) That was a matter of great importance to be known; and, besides, one was only half the price of the other. His son, and he, and the steward, examined the flax. It was sown in ridge about, in order to afford better means of making a comparison afterwards; hut none of them could observe any difference in the crops from the Riga and the Irish seed. (Hear, hear.) Let the farmers bear that in mind, and save the seed for future use. There was no doubt they were afraid to use the Irish seed; for they could not afford to speculate or lose a crop; but, taking the seed which is yielded from a crop raised from Riga seed, was, to his mind, perfectly safe. He trusted, therefore, farmers would take care, and for the future save the seed.

The resolution was then put from the chair and carried unanimously.

JOHN ROBERTS, Esq., moved the next resolution, which was one of thanks to the committee for their uniform exertions for the good of the Society. (Hear, hear.) He was sure he need not add any words to the resolution. All must appreciate their exertions; and the valuable report read that day shewed that they allowed nothing to escape their notice in connexion with the flax question. (Hear, hear.) Those who lived near Belfast doubly appreciated their exertions.

THOS. RICHARDSON, Esq., seconded the motion, which was put and carried.

R. B. B. HOUSTON, Esq., moved the next resolution.

GUSTAVUS HEYN, Esq., seconded it, and it was passed unanimously.

R. F. GORDON, Esq., observed, with reference to a remark of Mr. Anderson, that he (Mr. Gordon) had used home-saved seed with the best results. He had grown 35 acres, Cunningham measure, all from seed saved from flax grown by himself. It was seed which came from a crop which had been grown from Riga seed. The only difference he made was that this year he put the seed in a heavier soil.

Dr. HODGES here wished to make an explanation with reference to Claussen's patent. At the meeting of the British Association he read a report of the general history of flax growth, and the various modes which had been projected for the treatment of the plant after growth. He had referred to Claussen's patent among others, but he expressed no opinion about it one way or other. He had certainly given no opinion in favour of it. He had received a letter from the Secretary of the Flax Society, informing him of the wish of the Committee, that as the agents of Mr. Claussen represented that he had pronounced in favour of the patent, he would notice the matter at the meeting. In answer, therefore, he begged to read the precise words used by him at the meeting of the British Association. He then read as follows:—

"An inquiry having been committed to Sir Robert Kane, the Director of the Museum of Economic Geology, the reporter was requested, together with Professors Blythe and Murphy, of Cork, to make such investigations as might properly ascertain the value of the various methods proposed. But, unfortunately, it was found that the mechanical arrangements which had been made by M. Claussen's agents to illustrate the production of the new material from unsteeped flax, were not capable of affording satisfactory results; and, though some trials with tow proved more successful, yet it was found impossible to carry out the object of the inquiry at the locality selected. He believed it was the intention of the patentees to solicit a full investigation of the methods pursued in their operations at works which they have established near London, and where the material is produced in large quantities. The real value of Claussen's substitute for cotton must be decided by the experience of the manufacturers of England. With regard to the economy of the process, it would be improper to give an opinion until the investigation which M. Claussen solicits has taken place."

He still believed the manufacturers of England were the persons to decide on the value of the patent.

The Secretary observed that the present discussion upon M. Claussen's project was called for, by the revival of the newspaper articles in praise of it. In a Belfast journal of yesterday, was a paragraph written by a London correspondent, containing a lengthened statement of what the company formed to work Claussen's patent proposed effecting; and the allusion therein made to Dr. Hodges' remarks before the British Association, although not directly stating the point, certainly led to the inference that he had given a favourable opinion on the flax-cotton affair. Now, it was well known to himself (the Secretary) and to several members of the Society, that in every case where the newspaper and oral statements of M. Claussen and his friends, relative to the practical success of his plan, had been sifted, they had been found to rest on a very slight foundation, to be grossly exaggerated, and often untruly reported. The noble chairman might recollect, that when a deputation from the Flax Society explained to the Royal Agricultural Society of England their views of the matter, they expressed their opinion pretty freely on the inaccurracy of the published statements. (Hear, hear.) It was only this week that the manager of a concern in Yorkshire, whose owner had embarked a large sum in the speculation, had come to Belfast, and he had told him (the secretary) that so far from the process being successful, they had abandoned it, and are now employing other methods; and, further, that instead of being able to make flax-cotton for a penny or two-pence per lb., it actually cost them nine-pence. This was of a piece with all that had been said and done by the same parties, and he thought that, without condemning the principle of M. Claussen's invention, the Society were bound to observe the same caution they had hitherto exercised, until the question was freed from all exaggeration and mis-statement, and could stand on its merits, if merits really existed—(hear, hear.)

The **Chairman** suggested that the meeting should express its opinion whether the explanation offered by Dr. Hodges was satisfactory.

Mr. **Niven** said some of the committee did not think Dr. Hodges had given a satisfactory explanation. (A laugh.) For himself, he was present at the reading of Dr. Hodges' paper, and it did not appear to him that he conveyed any opinion in favour of the patent. He merely stated what the system was reported to be.

Dr. **Hodges** said, his object at the same time was simply to inform the Association what had been done. He expressed no opinion one way or the other. It would be injudicious in him to do so; because he might be again called on by the Government to act as a member of a commission to report on the matter. He might just mention, that while it appeared M. Claussen's agents represented him as having spoken in favour of their object, *The Morning Chronicle* attacked him because he had spoken against it.

J. **Temple Reilly**, Esq., said he was present at a meeting of the Royal Agricultural Society of Ireland, and he there requested one of the agents of M. Claussen to explain the process. He did so; but still he (Mr. Reilly) felt it his duty to advise caution; for, if farmers began to use caustic soda, or such matters, they would burn their fingers. (A laugh.) This turned M. Claussen greatly against the Society, but they could not help that.

The matter then dropped; and

The Dean of Ross moved Lord Downshire out of the chair, and Sir James Stronge into it; after which he moved the special thanks of the meeting to Lord Downshire for his conduct in the chair; his courtesy in conducting the business of the meeting; and his uniform attention to the interests of the Society.

Mr. **Gordon** seconded the motion, which was put and carried unanimously.

Lord **Downshire** said he thanked them sincerely for the compliment; but Dean Stannus had been, in one respect, astray; that was where he said he (Lord Downshire) paid uniform attention to the interests of the Society. He would be sorry it should be supposed his interest in the Society had been diminished; but he had not, he regretted, been able of late to attend the monthly meetings. Absence from Hillsborough and other causes prevented him. He cordially congratulated the Society on the proceedings of that day, and on its increased prosperity. The statement that we now exported flax was to him a most agreeable one, when they recollected that it fulfilled their prophecy, four or five years ago, that they would yet be able to export flax grown here. (Hear, hear.) He wished all present to impress on the farmers the necessity of saving the seed, instead of leaving it to rot in the water, or be scattered by the winds of heaven. £300,000 was the estimated sum they lost each year by not saving the seed; but this country was not so rich as to afford to lose that sum. (Hear, hear.) Let them impress this fact on the minds of the farmers; and it would be the best sermon they could preach to them.

The proceedings then terminated.

RESOLUTIONS.

At the Twelfth Annual General Meeting, held in the Society's Rooms, Commercial Buildings, Belfast, on Friday, 5th of November, 1852,

The Most Noble the Marquis of DOWNSHIRE, President of the Society, in the Chair,

the Annual Report of the Committee and Statement of Accounts having been read, the following Resolutions were unanimously agreed to:—

Moved by Sir J. M. Stronge, Bart., seconded by the Rev. J. Grey Porter, and resolved—

1. "That the Annual Report and Statement of Accounts now read be received and adopted, and that they be printed for circulation, with such other information as may appear desirable to the Committee."

Moved by the Lord Bishop of Down, seconded by Thomas Greg, Esq., J.P., and resolved—

2. "That the thanks of the Society are justly due, and are hereby offered to the Premier, the Lord Lieutenant, and the Chief Secretary for Ireland, for the continuance of the aid granted by the late Government towards the Society's operations in the South and West of Ireland."

Moved by Mr. John Birney, Esq., seconded by Geo. J. Clarke, Esq., J.P., and resolved—

3. "That, as a source of profit to the farmer, and employment to the labouring population of Ireland, especially in its intimate connexion with the staple manufacture of the country, the cultivation of flax is second in importance to none of the industrial resources of this island; that the Society hails with great satisfaction the progress already made towards its extension and improvement; and that every exertion should continue to be made for the complete attainment of the Society's ends."

Moved by A. Shafto Adair, Esq., D.L., J.P., seconded by Henry Anderson, Esq., J.P., and resolved—

4. "That the Society regards, with great interest, the various projects which are, from time to time, brought forward, for improving the processes of preparing flax fibre for manufacture, and that the Committee be requested to bestow the same minute and careful scrutiny on each which they have hitherto done."

Moved by John Roberts, Esq., seconded by Thomas Richardson, Esq., and resolved—

5. "That the thanks of this meeting be given to the Committee, for their untiring and impartial exertions in carrying out the Society's objects."

Moved by R. B. BLAKISTON HOUSTON, Esq., D.L., J.P., seconded by GUSTAVUS HEYN, Esq., and resolved—

"IV. That the following be the office-bearers for the ensuing year:—*Patrons*—Her Majesty the Queen, and H. R. H. Prince Albert. *Vice-Patrons*—The Lord Lieutenant of Ireland, and the Earl of Clarendon, K.G., G.C.B. *President*—The Marquis of Downshire. *Vice-Presidents*—The Marquis of Waterford; Marquis of Hertford; Earl of Erne; Earl of Caledon; Viscount Massereene; Viscount Dungannon; Viscount Bernard, M.P.; Lord Rossmore; Lord Monteagle; Lord Lurgan; the Lord Bishop of Down; Sir J. M. Stronge, Bart.; Sir R. Bateson, Bart.; Sir W. Verner, Bart., M.P.; R. Davison, M.P.; Very Rev. Dean of Ross; W. S. Crawford, D.L., J.P. *Committee*—W. G. Andrews; Rev. F. Blakely; J. Borthwick; James Campbell; J. Charters; J. S. Crawford, J.P.; W. Dargan; W. Ewart, jun.; F. Filgate, J.P.; R. F. Gordon, J.P.; George Greer, J.P.; John Hancock, J.P.; John Herdman; James Hind; Victor Kennedy; A. Mulholland, J.P.; S. K. Mulholland, J.P.; R. M'Kibben, M.D.; John M'Master; R. Niven; John Preston; J. T. Reilly, D.L., J.P.; J. J. Richardson; C. G. M. Skinner; W. Valentine; and S. Walker.

(Signed),

DOWNSHIRE, Chairman.
JAMES MACADAM, Jun., Secretary.

On the motion of the Very Rev. the Dean of Ross, seconded by R. F. GORDON, Esq., J.P., the Marquis of DOWNSHIRE having left the Chair, and Sir JAMES M. STRONGE, Bart., being called thereto, the thanks of the meeting were given to the Noble Marquis, for his able and dignified conduct in the Chair, and for his attention to the interests of the Society as its President.

(Signed).

JAMES M. STRONGE, Chairman.
JAMES MACADAM, Jun., Secretary.

APPENDIX.

DIRECTIONS
FOR THE
PROPER MANAGEMENT OF THE FLAX CROP,
COMPILED BY THE COMMITTEE
OF THE
ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

THE following directions have been carefully arranged from the mass of information obtained by the Society and their agriculturists, during their twelve years' experience in the improved system of management:—

SOIL AND ROTATION.

By attention and careful cultivation, good flax may be grown on various soils; but some are much better adapted for it than others. The best is a sound, dry, deep loam, with a clay subsoil. It is very desirable that the land should be properly drained and subsoiled; as, when it is saturated with either underground or surface water, good flax cannot be expected.

Without method, there cannot be success—different soils require a difference of rotation. In the best soils of Flanders flax is grown in the third year of a seven-course rotation, or the fifth year of a ten-course rotation.

It is not to be considered generally advisable to grow flax more frequently than once in ten years; not because it exhausts the land more than any other crops, but because good *flax* cannot be had at short intervals, on the same soil.[*] In Belgium, it invariably follows a corn crop—generally oats; and in this country, where oats is such a usual crop, the same system might be profitably pursued: but it must be understood, that it is only after oats following a green crop or old lea, and never after two or three succeeding crops of oats, which bad practice still prevails in some districts. It is a very general error

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[*] The following rotation, which would bring flax once in ten years, has been proposed:—First year, potatoes; second, barley, laid down with grasses; third year, cut for soiling; fourth year, pasture; fifth year, flax, or the one-half might be better in flax, the other in oats, so that, with the return of the rotation, which would be in five years, the flax could be put on the ground which, in the last rotatory course, was under corn throwing a range of ten years between the flax crops coming into the same ground.

A gentleman of much practical knowledge recommends the following as being the most profitable:—1. Oats after the grass and clover. 2. Flax pulled in August; then ploughed among farmers, to consider it necessary that flax should follow a potato crop. Except on very poor soils, a better crop will be produced after grain, and the double profit of the grain and flax secured. If old lea be broken up, and potatoes planted, followed by a grain crop, a very fine crop of flax may be obtained in the ensuing year.

PREPARATION OF THE SOIL.

One of the points of the greatest importance, in the culture of flax, is by thorough draining, and by careful and repeated cleansing of the land from weeds, to place it in the finest, deepest, and cleanest state. This will make room for the roots to penetrate, which they will often do to a depth equal to one-half the length of the stem above ground.

After wheat, one ploughing may be sufficient, on light friable loam, but two are better; and, on stiff soils, three are advisable—one immediately after harvest, across the ridges, and two in Spring, so as to be ready for sowing in the first or second week of April. Much will, of course, depend on the nature of the soil, and the knowledge and experience of the farmer. The land should be so drained and subsoiled, that it can be sown in flats, which will give more even and much better crops. Subsoiling should not be done at a less interval than two years prior to the flax crop. This gives the land time to consolidate. But, until the system of thorough-draining be general, it will be necessary, after oats, to plough early in Autumn, to the depth of six or eight inches. Throw the land into ridges, that it may receive the frost and air; and make surface drains to carry off the rains of Winter. Plough again in Spring, three or four inches deep, so as to preserve the Winter surface for the roots of the flax. The Spring ploughing should be given some time before sowing, to allow any seeds of weeds in the land to vegetate, and the harrowing in of the flaxseed will kill them, and save a great deal of after weeding. Following the last harrowing, it is necessary to roll, to give an even surface and consolidate the land, breaking this up again with a short-toothed or seed-harrow, before sowing, which should be up and down, not across the ridges or anglewise.

SOWING.

The seed best adapted for the generality of soils is Riga, although Dutch has been used, in many districts of country, for a series of years, with perfect success. American seed does not generally suit well, as it is apt to produce a coarse, branchy stem. If used, it should be on deep, loamy, soils. In buying seed, select it plump, shining, and heavy, and of the best brands, from a respectable merchant. Sift it clear of all the seeds of weeds, which will save a great deal of after trouble, when the crop is growing. This may be done by fanners, and through a wire sieve, twelve bars to the inch.

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and harrowed in with two cwt. guano and two cwt. gypsum; then sown with rape. 3. Potatoes or turnips, well manured. 4. Wheat, sown in Spring, with clover and ryegrass. 5. Hay and clover. 6. Grazing. 7. Oats. 8. Flax and Winter vetches; guano, as before mentioned. 9. Turnips, well manured. 10. Barley, sown with ryegrass and clover. 11. Clover and hay. 12. Grazing. 13. Oats.

Home-saved seed has produced such excellent crops, of late, that it is strongly recommended that every farmer should only sow, each year, as much foreign seed as would produce a sufficient quantity for his flax crop of the following season.* The thinner portion of the crop would be the best for this purpose, as, when flax grows thin, it produces much seed. This plan, besides the saving effected in the price of foreign sowing seed, would effectually secure the farmer from any danger of loss from fraudulently made-up seed. It will be best, in most cases, to use the seed which is saved from this, in the following year, for feeding, or to sell it for the oil mills, although it often produces good crops. The proportion of seed may be stated at three and a-half imperial bushels to the Irish or Plantation acre; and so on, in proportion to the Scotch or Cunningham, and the English or Statute acre. It is better to sow too thick than too thin; as, with thick sowing, the stem grows tall and straight, with only one or two seed capsules at the top; and the fibre is found greatly superior, in fineness and length, to that produced from thin-sown flax, which grows coarse, and branches out, producing much seed, but a very inferior quality of fibre. The ground being pulverized and well cleaned, roll and sow. If it has been laid off without ridges, it should be marked off in divisions, eight to ten feet broad, in order to give an equable supply of seed. After sowing, cover it with a seed harrow, going twice over it—once up and down, and once across or anglewise; as this makes it more equally spread, and avoids the small drills made by the teeth of the harrow. Finish with the roller, which will leave the seed covered about an inch—the proper depth. The ridges should be very little raised in the centre, when the ground is ready for the seed, otherwise the crop will not ripen evenly; and, when land is properly drained, there should be no ridges. The sowing of clover and grass seeds along with the flax, is not advised, when it can be conveniently avoided, as these plants always injure the root ends of the flax. But carrots may be sown, in suitable soils, in drills, so that the person pulling the flax may step over the rows, which may be afterwards hoed and cleaned, and should have some liquid manure. A stolen crop of rape or Winter vetches, or of turnips of the stone or Norfolk globe varieties, may be taken, after the flax is pulled. Rolling the ground after sowing is very advisable, care being taken not to roll when the ground is so wet that the earth adheres to the roller.

MANURE FOR THE FLAX CROP.

Recent chemical investigations have shewn that the fibre of flax does abstract from the soil certain matters, although not in so large a proportion as several other commonly cultivated crops. To supply to the soil all the matters which the entire plant requires, so as to leave the land in the same state of fertility as before, the following compound has been proposed, by Professor Hodges, as a manure, which may be sown broadcast on the land, prior to the last harrowing before sowing the flax-seed:—

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* The produce of seed averages about 12 bushels the Statute acre, so that the seed saved off one Statute acre would sow about five.

FOR A STATUTE ACRE OF LAND.		s.	d.
Muriate of Potash, 30 lbs., ...	cost about	3	0
Chloride of Sodium (common salt), 28 lbs., ...	"	0	3
Burned Gypsum, powdered, 34 lbs., ...	"	0	6
Bone dust, 54 lbs., ...	"	3	3
Sulphate of Magnesia (Epsom Salts), 56 lbs., ...	"	4	0
		11	0

WEEDING.

If care has been paid to cleaning the seed and the soil, few weeds will appear; but if there be any, they must be carefully pulled. It is done in Belgium by women and children, who, with coarse cloths round their knees, creep along on all-fours. This injures the young plant less than walking over it (which, if done, should be by persons whose shoes are not filled with nails). They should work, also, facing the wind, so that the plants laid flat by the pressure may be blown up again, or thus be assisted to regain their upright position. The tender plant, pressed one way, soon recovers; but, if twisted or flattened by careless weeders, it seldom rises again.

PULLING.

The time when flax should be pulled is a point of much nicety to determine. The fibre is in the best state before the seed is quite ripe. If pulled too soon, although the fibre is fine, the great waste in scutching and hackling renders it unprofitable; and if pulled too late, the additional weight does not compensate for the coarseness of the fibre. It may be stated, that the best time for pulling is, when the seeds are beginning to change from a green to a pale brown colour, and the stalk to become yellow, for about two-thirds of its height from the ground. When any of the crop is lying, and suffering from wet, it should be pulled as soon as possible, and kept by itself. So long as the ground is undrained, and imperfectly levelled before sowing, the flax will be found of different lengths. In such cases, pull each length separately, and steep in separate pools, or keep it separate in the same pool. Where there is much second growth, the flax should be caught by the puller just underneath the bolls, which will leave the short stalks behind. If the latter be few, it is best not to pull them at all, as the loss from mixture and discoloration by weeds would counterbalance the profit. If the ground has been thorough-drained, and laid out evenly, the flax will be all of the same length. It is most essential to take time and care to keep the flax even, like a brush, at the root ends. This increases the value to the spinner, and, of course, to the grower, who will be amply repaid, by an additional price, for his extra trouble. Let the handfuls of pulled flax be laid across each other diagonally, to be ready for the

RIPPLING,

Which should be carried on at the same time, and in the same field, with the pulling. If the only advantage to be derived from rippling was the comparative ease with which rippled flax is handled, the practice ought always to be adopted; but, besides this, the seed is a most valuable part of the crop, being worth, if sold for the oil mill, £3 per acre, and if used for feeding stock of all kinds, at least £4 per acre. The apparatus is very simple. The ripple consists of a row of iron teeth screwed into a block of wood. This can be procured in Belfast, or may be made by any handy blacksmith.* It is to be taken to the field, where the flax is being pulled, and screwed down to the centre of a nine-feet plank, resting on two stools. The ripplers may either stand or sit astride at opposite ends. They should be at such a distance from the comb, as to permit of their striking it properly and alternately. A winnowing sheet must be placed under them, to receive the bolls as they are rippled off; and then they are ready to receive the flax just pulled, the handfuls being placed diagonally, and bound up in a sheaf. The sheaf is laid down at the right hand of the rippler, and untied. He takes a handful with one hand, about six inches from the root, and a little nearer the top with the other. He spreads the top of the handful like a fan, draws the one-half of it through the comb, and the other half past the side; and, by a half-turn of the wrist, the same operation is repeated with the rest of the bunch. Some, however, prefer rippling without turning the hand, giving the flax one or two pulls through, according to the quantity of bolls. The flax can often be rippled, without being passed more than once through the comb. He then lays the handfuls down at his left side, *each handful* crossing the other, when the sheaf shall be carefully tied up and removed. The object of crossing the handfuls so carefully, after rippling, when tying up the beets for the steep, is, that they will part freely from each other, when they are taken to spread out on the grass, and not interlock, and be put out of their even order, as would otherwise be the case. If the weather be dry, the bolls should be kept in the field, spread on winnow-cloths, or other contrivance for drying; and, if turned from time to time, they will win. Passing the bolls first through a coarse riddle, and afterwards through fanners, to remove straws and leaves, will facilitate the drying. If the weather be moist, they should be taken in-doors, and spread out thinly and evenly on a barn floor, or on a loft, leaving windows and doors open, to allow a thorough current of air, and turned twice a-day. When nearly dry, they may be taken to a corn kiln (taking care not to raise it above Summer heat), and carefully turned, until no moisture remains. By the above plan of *slow* drying, the seed has time to imbibe all the juices that remain in the husk, and to become perfectly ripe. If it be taken at once from the field, and dried *hurriedly* on the kiln, these juices will be burned up, and the seed will become shrivelled and parched, little nutritious matter remaining. In fine seasons, the bolls should always be dried in the open air, the seed thrashed out, and the heaviest and plumpest used for sowing or crushing. The light seeds and chaff form most wholesome and nutritious feeding for cattle. Flax ought not to be allowed to stand in the field, if possible, even the second day; it should be rippled as soon as pulled, and carried to the water as soon possible, that it may not harden.

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* The best ripples are made of half-inch square rods of iron, placed with the angles of iron next the ripplers, 3-16ths of an inch asunder at the bottom, half-an-inch at the top, and 18 inches long, to allow a sufficient spring, and save much breaking of flax. The points should begin to taper 3 inches from the top.

WATERING.

This process requires the greatest care and attention. River water is the best. If spring water has to be used, let the pond be filled some weeks, or months, if possible, before the flax is put in, that the sun and air may soften the water. That containing iron or other mineral substances should never be used. If river water can be had, it need not be let into the pond sooner than the day before the flax is to be steeped. The best size of a steep-pool is 12 to 18 feet broad, and 3½ to 4 feet deep. Place the flax loosely in the pool, in one layer, somewhat sloped, and in regular rows, with the root end underneath; the tie of each row of sheaves to reach the roots of the previous one; cover with moss sods, or tough old lea sods, cut thin, laid perfectly close, the sheer of each fitted to the other. Before putting on the sods, a layer of rushes or ragweeds is recommended to be placed on the flax, especially in new ponds. As sods are not always at hand, a light covering of straw may do, with stones laid on it, so as to keep the flax just under the water; and as the fermentation proceeds, additional weight should be laid on—to be removed as soon as the fermentation ceases, so as not to sink the flax too much in the pool. Thus covered, it never sinks to the bottom, nor is affected by air or light. A small stream of water, allowed to run through a pool, has been found to improve its colour. In this case, if the pools are in a line, the stream should be conducted along the one side, and run into each pool separately, and the water of each pool run off, along the opposite side, in a similar manner. It will be sufficiently steeped, in an average time, from eight to fourteen days, according to the heat of the weather and the nature of the water. Every grower should learn to know when the flax has had enough of the water, as a few hours too much may injure it. It is, however, much more frequently *under*-watered than *over*-watered. The best test is the following:—Try some stalks, of average thickness, by breaking the *shove*, or woody part, in two places, about six or eight inches apart, at the middle of the stalk; catch the broken bit of wood, and if it *will pull freely out, downwards, for that length, without breaking or tearing the fibre, and with none of the fibre adhering to it*, it is ready to take out. Make this trial every six hours, after fermentation subsides, for sometimes the change is rapid. Never lift the flax roughly from the pool, with forks or grapes, but have it carefully handed out of the flax drain by men standing in the water. It is advantageous to let the flax drain twelve to twenty-four hours, after being taken from the pool, by placing the bundles on their root ends, close together, or on the flat, with the slope; but the heaps should not be too large, otherwise the flax will be injured by heating.

There are two new systems of steeping or retting flax, on a large scale, now in operation. The one is by hot water, or what is called Schenck's method; and the other by steam, or Watt's method. In both cases they are carried on, on a large scale, by persons who purchase the flax straw from the farmers, as pulled and dried on the Courtrai system (see page 40). Both plans are protected by patents, and authorisation to adopt them must be had of the patentees.*

SPREADING.

Select, when possible, clean, short, thick pasture ground for this operation; and mow down and remove any weeds that rise above the surface of the sward. Lay the flax evenly on the grass, and spread thin and very equally. If the directions under the head of rippling have been attended to, the handfuls will come readily asunder, without entangling. Turn it two or three times while on the grass (with a rod about eight feet in length, and an inch and a-half in diameter), that it may not become of different shades, by the unequal action of the sun, which is often the case, through inattention to this point. Turn it when there is a prospect of rain, that the flax may be beaten down a little, and thus prevented from being blown away.

LIFTING.

Six to eight days' if the weather be showery, or ten to twelve if it be dry, should be sufficient on the grass. A good test of its being ready to lift is, to rub a few stalks from the top to the bottom; and, when the wood breaks easily, and separates from the fibre, leaving it sound, it has had enough of the grass. Also, when a large proportion of the stalks are perceived to form a *bow and string*, from the fibre contracting and separating from the woody stalk. But, the most certain way is, to prove a small quantity with the hand-break or in a flax mill. In lifting, keep the lengths straight and the ends even, otherwise great loss will occur in the rolling and scutching. Let it be set up to dry for a few hours, and afterwards tie it up in small bundles; and, if not taken soon to be scutched, it will be much improved by being put up in small stacks, loosely built, with stones or brambles in the bottom, to keep it dry, and allow free circulation of air. Stacks built on pillars would be the best.

DRYING,

By fire, is *always most pernicious*. If properly steeped and grassed, no such drying is necessary; but, to make it ready for breaking and scutching, exposure to the sun is sufficient. In some districts, it is put to dry *on kilns*, in a damp state, and is absolutely burned before it is dry, and the rich oily appearance of the flax is always greatly impaired. On this point, the Society can scarcely speak too strongly, as the flax is either destroyed, or rendered not worth oue-half of what it would be, if properly dried.

BREAKING AND SCUTCHING,

If done by hand, should be on the Belgian system, which is less wasteful than that practised in Ireland. If by milling, the farmer will do well to select those mills in which the improved machinery has been introduced. The Society would also recommend, that the farmer should endeavour to have his flax scutched by a mill-owner who pays his men by the day, and not by the stone, even if it should cost him higher in proportion; the system of paying the scutchers by the stone rendering them more anxious to do a large quantity in the day than to produce a good yield from the straw.

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* By addressing a communication to Messrs. Bernard & Koch, Cregagh Flax Works, Belfast, terms for Schenck's system may be ascertained, with full particulars of the apparatus required.

THE COURTRAI SYSTEM.

This is the mode in which flax should be saved for steeping on Schenck's or Watt's patent systems. It requires to be very carefully done, as inattention will reduce the value of the straw, and yield inferior fibre. When made up, for drying, in large sheaves, the straw is much injured, the outside stalks being much discoloured, by the heat of the sun, before the inside of the sheaf is dry. The flax stems should be put together in bunches, about one-half larger than a man can grasp in one hand, spread a little, and laid on the ground in rows after each puller; the bunches laid with tops and roots alternately, which prevents the seed-bolls from sticking to each other in lifting. It should be stooked as soon after pulling as possible, and never allowed to remain over night unstooked, except in settled weather. The stooking should go on at the same time as the pulling, as, if flax is allowed to get rain while on the ground, its colour is injured. A well-trained stooker will put up the produce of a Statute acre, or more, in good order, in a day, with two boys or girls to hand him the bunches. The flax should be handed with the tops to the stooker. The handfuls, as pulled, are set up, resting against each other—the root ends spread well out, and the tops joining like the letter A. The stooks are made eight to ten feet long, and a short strap keeps the ends firm. The stooks should be very narrow on the top, and thinly put up, so that they may get the full benefit of the weather. In six or eight days, at most, after being pulled, the flax should be ready for tying up in sheaves of the size of corn sheaves. It is then ricked, and allowed to stand in the field until the seed is dry enough for stacking. To build the rick, lay two poles parallel on the ground, about a foot asunder, with a strong upright pole at each end. The flax is then built, the length of a sheaf in thickness or breadth. The bottom poles should be laid North and South, so that the sun shall get at both sides of the rick during the day. In building, the sheaves should be laid tops and roots alternately, built seven to eight feet high, and finished on the top by laying a single row of sheaves lengthwise, or across the others, and then another row as before, but with the tops all the same way, which gives a slope to throw off rain, and finished by putting on the top a little straw, tied with a rope. In this way, if properly built, it will stand secure for months. It can be stacked at leisure, or put in a barn, the seed taken off during the Winter, and the flax steeped in the following May; or it may be kept stacked, without receiving any injury, for two or three years, or even longer.

MR. WARNES'S (OF TRIMINGHAM) SYSTEM OF BOX-FEEDING.

SUMMER.—Rye grass and clover, or any other green crop, cut into chaff of about an inch long, with the addition of ground linseed made into compound. WINTER—Seven-eighths straw—one-eighth hay, with turnip tops or wurzel leaves cut into chaff, with the addition of linseed as above. *To make the compound*, fill the furnace with water to within six inches, and, when boiling, strew by hand one-fifth of linseed meal to four-fifths of water, a boy stirring the meal in, till it is well mixed—(damp the fire); let the mucilage simmer about five or six minutes, when it will become a strong jelly. Into a large tub put about three bushels of the chaff, adding enough of the mucilage to wet it; mix and ram well down, then add more chaff, &c., mixing and ramming down every three baskets. The compound is then covered over, and in about two hours, the mucilage being absorbed by the chaff, may be given to the cattle. If it is wished to *push the cattle on*, sprinkle a small proportion of the meal of barley, or other corn, upon which layer of the chaff and mucilage, also Swedish turnips, carrots, or wurzel, cut small, may be added, to give the compound a flavour. Altogether, the above compound will be found, at the present juncture, extremely economical for *fattening*, rearing, or maintaining store stock. DIRECTIONS FOR FEEDING. SUMMER.—*(At Five in the Morning and Three in the Afternoon.)*—Give each beast about half-a-bushel of the compound, feeding the remainder of the day with chaff. Water once a-day. WINTER.—*(Morning, Five o'clock.)*—Begin with half-a-peck of the compound to each beast; continue this food till the beasts are nearly satisfied. *(At Seven and Nine.)*—Feed with half-a-bushel of cut Swedish turnips to each, at tw'ce. *(Eleven.)*—A feed of the compound. *(Afternoon, at One and Three.)*—As many Swedes as the beasts will eat, *a little at a time*. *(Six.)*—A good feed of compound, leaving for the night. The boxes or sheds in which the cattle are kept, must be sparingly littered twice a-day, and cleaned out when full. Food to be given a *little* at a time. UTENSILS.—An iron furnace, to hold forty gallons; an iron stirrer (like a small mashing stick); an iron bowl, with a handle; a linseed crusher—tub or stone cistern of about 100 gallons—wooden rammer; a bushel basket—chaff cutter—turnip cutter; a fork, with four flat prongs; a common bucket, with iron handle; a skip or box to hold about a peck; a bin, with partitions for linseed before and after crushing. In fixing the boiler, it should have a curb of wood, six inches deep, sloping back; this will prevent the mucilage boiling over. [For directions to make compound of grain, and other particulars, see Mr. Warnes's book, to be had of all booksellers.]

BRITISH ASSOCIATION'S MEETING AT BELFAST.

DR. HODGES' LECTURE ON THE FLAX PLANT.

THE following extracts embody the most novel points brought forward by Professor Hodges, in his paper read before the British Association, at Belfast, 23d September, 1852:—

THE COMPOSITION OF THE FLAX PLANT.

I conceive that the most satisfactory method will be to communicate the history of a crop grown by myself for experimental purposes, and the progress of which I was able carefully to watch, from the sowing of the seed to its conversion into dressed flax for the market. Some of the details which I have collected, though of much importance in the study of agricultural science, have not been hitherto much attended to in this country. The field selected for the experiments was situated about a mile and a-half from Belfast. It has a S.W. aspect, and the soil is composed of transported materials, such as are common in the districts surrounding Belfast.

July 28.—One plant of flax, in seed, was taken—height above ground, 31 inches, root, 5½ in. long; length from surface of field to first branch, 24 inches. About 5 inches of the lower end of stem had become yellow. The weight of entire plant was 71.1 grains. It was cut into three portions, which were separately incinerated, with the following results:—

1. Root and lower part of stem weighed, dried, 6.60 grains, gave 0.094 ash, 1.424 per cent.
2. Capsules and branches, dry, weighed 9.47, gave .293 ash, 3.094 per cent.
3. Middle portion, dry, weighed 5.55 gave .143 ash. Ash in dry stem, 2.622 per cent.

August 10*th*.—One plant taken—entire length with root, 37 inches; length from surface of soil to branches, 29 inches; stem of a light straw colour; leaves withered on 10 inches of stem; capsules 10 in number—seeds green; weight of entire plant, 71 grains; branches and capsules, 31.8 grains; water in plant, 45,335 grains; solid matter in do., 25.665 grains; inorganic matter in do., 1.006 grains.

PER-CENTAGE COMPOSITION.

Water	63.852	dry.
Organic matters, ...	34.732	96.08
Ash, ...	1.416	3.92
Total, ...	100.000	100.000

August 25.—The pulling of the crop was begun—a plant was taken and examined; weight of entire plant, 62.40 grains; weight of capsules 22.50.

PER-CENTAGE COMPOSITION OF STEM.

	In Fresh plant.	*Dry.*
Water, ...	56.64	...
Organic matters, ...	41.97	96.89
Ash, ...	1.39	3.11
Total, ...	100.00	100.00

Water in straw of plants as sent to the steeping works, after 14 days' exposure to the air, in stooks, 12.2 per cent; water in air-dried capsules, 11.84 per cent; weight of the air-dried flax, with bolls produced on the experimental field, 7,770 lbs.

COMPOSITION OF THE CROP.

100 parts of the ash of the dry straw and capsules had respectively the following composition:—

	Ash of Straw.	*Of Capsules.*
Potash, ...	20.32	16.38
Soda, ...	2.07	6.25
Chloride of sodium,...	9.27	12.98
Lime, ...	19.88	13.95
Magnesia, ...	4.05	3.91
Oxide of iron, ...	2.33	0.38
Sulphuric acid, ...	7.13	14.51
Phosphoric acid, ...	10.24	23.26
Carbonic acid, ...	10.72	6.37
Silica, ...	12.80	0.67
Total, ...	99.31	99.66

AMOUNT OF NITROGEN CONTAINED IN THE STRAW AND CAPSULES.

The proportions of nitrogen contained in the straw and capsules were ascertained by the method of Well & Vanentrap, calculated from the bi-chloride of ammonia and platinum. The results were as follow, per cent.:—

1. In the straw dried at 212, ... 0.53 nitrogen.
2. In the capsules or bolls do., ... 1.26 do.

One of the earliest among those who directed their attention to the chemical composition of flax, was a distinguished member of this Association, Sir Robert Kane. Since that time analysis of the ash of straw of flax have been published by Professor Johnston, of Durham; Messrs. Mayer & Brazier, and by Mr. Way, in England; by Lench Tweiss, in Germany; and by the Reporter. The only examination of the proximate constituents of the plant, so far as I am aware, consists of an analysis of the seed by Leo Mayer. It is indeed strange that a plant, the straw of which has afforded occupation to the industry of so large a portion of the world in all ages, and the preparation of which, for commercial purposes, consists in acting upon its proximate constituents, should not have been more carefully investigated. Having been for some time engaged with investigations for the Royal Flax Society in this important department, I shall, on some other occasion, bring before you the details of my analysis. At present I shall merely state the general results of the examination of a specimen of flax straw taken from the experimental crop. A preliminary examination of the straw having indicated the presence of a volatile oil, a quantity of the stems of the plant carefully deprived of the seed capsules was distilled with water containing common salt, and from the distillate, which was without action on litmus, I obtained an oil of a yellow colour; 5lbs. of the stems afforded about ten grains of this oil, which had an agreeable penetrating odour, and the distillate of the stems suggested the peculiar smell which is remarked on entering a room where flax is stored.—The straw, coarsely powdered, was placed in an extraction apparatus, and successively treated with ether, absolute alcohol, water, dilute hydro-chloric acid, and weak solution of potash. The solutions obtained on examination were found to contain wax, traces of chlorophyle, a peculiar green resin, a bright brown gum resin, which presented some of the characters of the principle which Pagenstecher termed linen, and described as existing in the *Linum catharticum*, or "purging flax," but could not be identified with it, a modification of tannic acid which afforded a grey precipitate with perchloride of iron, but was not affected by solutions ot isinglass or tartar emetic gum, not affected by solution of borax or basic sillicate of potash, a brown colouring matter, albumen, casein, starch, pectin, cellulose, and salts. The following table exhibits the action of the various solutions employed:—

1.	Soluble in ether, ...	2.83
2.	Soluble in absolute alcohol,	3.52
3.	Soluble in water,	5.92
4.	In dilute hydro-chloric acid,	22.76
5.	In dilute caustic potash, ...	16.39
6.	Cellulose and salts,	48.58
		100.00

I shall now proceed to the fourth division of the subject, and describe the various methods which are adopted for the purpose of preparing the flax plant for the spinner. I shall not, in this place, allude to the economy of its seed, but confine myself to the management of the fibre of the plant, to obtain which, of superior quality, is the main object of the flax-growers of Ulster. When a portion of the straw, as it is termed, of the flax plant is examined, it is found to consist of three parts; first, of a woody central hollow column, which the microscope shews to be composed of cellular tissue; second, of a tubular sheath, composed of long and firm bast cells; and thirdly, of a delicate covering of epidermis. By rubbing a piece of dried flax straw between the fingers, the woody central part and delicate epidermis can be readily broken to pieces, while the tough fibres of the bast cell will be found to remain but little injured. Those tough fibres, which are capable of being split into filaments of extreme delicacy, constitute the raw material of our greatest national manufacture.

From the earliest times only one method has been found capable of yielding the textile material in a condition adapted for every purpose, and possessing all the qualities demanded by the spinner, viz., the decomposition by the process of fermentation of the adhesive substances which connect together the bast fibres and the ligneous tissues of the straw. It is by this process, variously modified in the arrangements for conducting it, that nearly all the fibre produced in the great flax-growing countries of Europe is at present prepared. In many parts of Germany the fermentation is induced by exposing the flax, spread in the fields, to the influence of the air and moisture; while in Belgium, which is justly regarded as the model country of flax management, the practice of enclosing the straw in wooden frames, and immersing it in the waters of rivers until the necessary changes are produced, is, in many places, adopted and found to yield fibre of superior quality.

In Ireland, at the present time, two modifications of the system of fermentation are in use—one of which consists in steeping the straw in pools of water in the open air at ordinary temperatures, while according to the other method, the steeping is transferred from the farm to the factory, and the fermentation accelerated by employing water maintained at an elevated temperature. The former method of steeping has prevailed in this country and in other parts of Europe to some extent from the earliest times; and though it has been asserted by some writers, without, however, any authority for the statement, that the ancient inhabitants of this island prepared the flax in the same rude manner, by beating the unsteeped straw, as observed among some of the people of the South Sea Islands, yet we may, I think, infer from the number of places to which the name "*poll a lin*," *i.e.* flax-hole, is applied, that they steeped it in water. The plan followed by the farmer, who adopts the plan of steeping the flax on his farm in the open air, is to excavate a pond in connexion with some convenient stream. The dimensions preferred are from twelve to eighteen feet broad, and about four feet deep. The quality of the water employed requires careful consideration—hard waters being found materially to interfere with the process; ferruginous waters also are avoided; and in those districts where the steeper is obliged to make use of them, the flax acquires a dark tinge, which the bleacher finds it difficult to remove.—From the action of the salts of iron upon the modification of tannic acid, which I have shewn to exist in the straw, we can readily understand that the presence of iron in the water of the steep-hole, must be prejudicial. As the oozing of water from the adjoining soil also frequently produces discoloration of the flax, careful steepers place on each side of the pond a small drain to prevent the entrance of drainage waters. The flax, after pulling, is prepared for steeping by removing the seed capsules, or bolls, by means of a simple machine, composed of a number of iron teeth, about eighteen inches long, screwed to a socket of wood, and fixed perpendicularly on a long bench, upon which the workmen sit. The bolls are separated from the stems by the workmen taking a handful of the flax, spreading it out, and drawing it through the teeth of the ripple, as the machine is termed. Sometimes, however, the steeping does not take place until the flax has been stored for some time, and has become so dry that the fibre would be liable to injury by using the common rippling machine. In such cases the seed is beaten off by means of a beater, formed of a block of wood furnished with a curved handle.

During the steeping the water acquires a dark brown colour, carbonic acid is disengaged in great abundance, and the surface becomes covered with a gelatinous scum. To remove this matter it is usual to allow a gentle current of water to flow over the surface of the pond from the supplying stream, as, when it is allowed to remain, the colour of the flax is found to be injured.—Various methods are resorted to in this, and other flax-growing countries, to ascertain the proper period for the removal of the flax from the pond. Thus, the Silesian steepers take some stalks of the flax from the pits, and place them on the surface of the water. If the stalks sink they remove the flax, but if they swim they allow the steeping to continue for some days longer; while the Irish farmer, day after day, when the fermentation has fairly commenced, anxiously tests the progress of decomposition by drawing a few stalks from one of the flax bundles and breaking them across in two places, about three inches apart. If he can readily pull away the central woody column without tearing the filaments of bast which surround it, he considers that the period has arrived for removing it from the pit.

It is easy to perceive that the peculiar series of changes which facilitate the breaking up of the various organic compounds which compose the structure of the flax plant, must, in our fickle climate, where so many sudden alternations of temperature occur, be liable to frequent disturbance, and that the progress of the fermentation, in the shallow steeping-pools, must be exceedingly irregular and uncertain. It is not, indeed, to be wondered that, notwithstanding the closest supervision, the most experienced steepers should frequently be deceived, and that one part of the flax should be too much decomposed, while another part has not properly experienced the alterations which facilitate the complete separation of the valuable material.

PRODUCE OF FIBRE, &c.—The amount of rippled flax straw, viz., 5,824lbs., ascertained in my experiment, considerably exceeded the ordinary produce of the farmer. From the returns of the Royal Flax Society, and from my own inquiries, I would estimate the average produce of a Statute acre in the North of Ireland of air-dried flax straw, with bolls, at two tons, which, by the seeding machine, are usually reduced to 3,360lbs. By the various processes of the rural manufacturer, the amount of dressed flax or fibre obtained averages from four to five cwt. per acre. Some time ago, I made an experiment at one of the country scutch-mills near Belfast, for the purpose of ascertaining the relative proportions of the various products, and also the distribution of the inorganic matters. The flax employed had been steeped in the usual way, and was found to contain 173 per cent. of inorganic matters:—

4,000lbs. of air-dried straw produced of

Dressed flax, ...	500lbs.
Fine tow, ...	132
Coarse tow, ...	192
	824lbs.

The material used contained

In the flax, ...	4.48lbs, of inorganic matters.
In the fine tow, ...	2.08
In the coarse tow, ...	2.56, or in all 9.12lbs.

So that 59.08lbs. of the inorganic matters, which the crop had withdrawn from the field, remained locked up in the woody shoves which, as obstinately resisting decomposition, are used for fuel, while 9.12lbs. were carried away in the dressed flax and tow sold to the spinner.

When the crop had been completely air-dried, by exposure in the field, so as to yield all, as already stated, in the straw, when dried at 212 degs., only twelve per cent. of water, it was removed to the steeping works at Cregagh. It was there placed in stacks, and after some time prepared for steeping. The first operation for this purpose is the removal of the valuable bolls or capsules. This, in these establishments, where the cost of labour is carefully considered, is usually most expeditiously and perfectly effected, by means of a machine composed of two cast iron rollers, to which motion is communicated by a belt from the steam-engine. Between these the flax is passed and the capsules bruised, so that the seed can be readily shaken out. Having been deprived of its bolls, by this machine, it was found that the 7,770 lbs. of flax were reduced to 52 cwt., or 5,824 lbs.

Of the portions of the plant removed by the seeding machine, 910 lbs. consisted of clean seed, 1036 lbs. of husks, leaves, and sand. The loss experienced by the flax in steeping was 13 cwt. From the 52 cwt. of seeded straw, the produce of the experimental crop, there remained 6 cwt. 1 qr. 2 lbs. of marketable fibre.

The taste of the steep-water, at first, is rather agreeably acid, but followed by the peculiar plant-like taste of the flax. By the addition to the liquid of carbonate of lime, its acidity is destroyed. Contrary to what has been stated, in some reports on this subject, the liquid, I found, at the conclusion of the process, yields nearly a trace of acetic acid, and, in numerous experiments, no trace of the evolution of sulphuretted hydrogen could be detected at any stage of the fermentation. When the flax is allowed to remain in the vats after the usual time, a new series of changes, and a fresh and rapid extrication of gas, take place. I have made, during the last three years, numerous experiments, with respect to the composition of the steep-water, from several establishments, and, also, from the common steep-pools, which afforded me some interesting results, and satisfied me that the fermentation which is induced by steeping flax in water resembles the so-called butyric acid fermentation, merely traces of acetic acid, and invariably large quantities of byturic acid having been detected in every case. In fact, the fragrant butyric ether, so extensively employed in the preparation of pine-apple rum, and in flavouring confectionery, might readily be obtained, in large quantities, from the stinking waters of the flax pool.

To ascertain exactly the effect produced by steeping, and the composition of the steep-water, I obtained from the works at Cregagh, a sample of flax straw unsteeped, a portion of steeped straw taken from the same lot, and a gallon of the steep-water taken from the vat immediately after the removal of the flax. The composition of the ash obtained by burning the extract of the steep-water, and the samples of the straw, is given in the table. The spring water employed at the works, is moderately hard, indicating, on Dr. Clarke's scale, 8 degrees. It was not considered necessary to deduct the ingredients supplied in it, as these would add but little to its fertilizing value. An imperial gallon of the liquid of the vat was found to contain in grains and tenths—

Organic matters, ...	136.7
Inorganic matters, ...	131.4
Total solid matters, ...	268.1 grains.

Composition of the Ash of the Flax Straw before and after Steeping, and of the inorganic matters of the Steep Water.

100 parts of each respectively contained,

	Unsteeped Flax.	Steeped Flax.	Ash of the Steep Water.
Potash, ...	13.88	11.40	19.31
Soda, ...	5.33	4.17	....
Chloride of Potassium, ...	....	....	3.83
Chloride of Sodium, ...	6.47	3.28	21.24
Lime, ...	18.86	17.69	8.23
Magnesia, ...	4.10	5.50	10.18
Oxide of Iron, ...	5.40	5.76	2.02
Sulphuric Acid, ...	11.16	4.07	6.10
Phosphoric Acid, ...	9.63	11.87	3.77
Carbonic Acid, ...	10.37	20.06	23.30
Silica, ...	15.23	15,78	1.12
Sand, ...	....	....	0.60
	100.43	99.58	99.77
Ash per cent. in the Straw, ...	3.89	2.59	......

100 grains of the dried extract of the steep water contained 1.56 nitrogen, =1.89 grains of ammonia: therefore, an imperial gallon would be capable of supplying 5 grains, and a vat, containing 3,000 gallons of water, 2 1-10lbs., worth about 1s 2d to the farmer; while the same amount of liquid, placed on his field would convey to them about the same amount of phosphoric acid.

By the kindness of the Proprietors of the Steeping Works, at Cregagh, who have liberally given me an opportunity of inspecting the books of their establishment, I am enabled to give the following statement of the changes which 100 tons of flax undergo when treated by Schenck's process.

100 tons of air-dried Flax Straw yield—

	Tons.
1. *By Seeding*—33 tons of seed and husks, leaving of seeded flax....	67
2. *By Steeping*—67 tons of seeded flax yield of steeped straw........	39.5
3. *By Scutching*—39½ tons of steeped straw yield of dressed flax.....	5.90
of tow and pluckings..................	1.47

ERECTION OF BUILDINGS

SUITABLE TO

SCUTCH MILLS FOR FLAX IN IRELAND,

AND FOR

THE FORMATION OF WATER-COURSES AND WEIRS

NECESSARY FOR PROVIDING WATER-POWER FOR THE SAME.

THE following Instructions have been issued, by the Lords Commissioners of her Majesty's Treasury, for the guidance of the Commissioners of Public Works, with respect to loans to be made for the erection of Scutch Mills for flax, in Ireland; and no loan can be made unless in accordance therewith.

"1. All buildings to be executed according to plans and specifications approved of by the Commissioners of Public Works.

"2. Loans to be confined to the erection of buildings consisting of substantial stone or brick walls with slated roofs, and suitable doors and windows, and to the formation of water-courses and weirs necessary for providing water-power for the mills. The internal fitments and machinery of all kinds to be provided by the applicant out of his own funds.

"3. No loan to exceed £500, without the special authority, in each case, of the Lords Commissioners of her Majesty's Treasury.

"4. No loans to be made for dwelling-houses, or for repairing or enlarging old buildings, or raising on old walls or foundations.

"5. The loan, in each case, to be issued in five or more instalments, and no instalment after the first to be paid until satisfactory proof has been given of the due completion of that portion of the works, the expense of which was to be defrayed out of the previous instalment.

"6. No loan to be made unless it shall appear that the lands to be charged are of ample value."

From the foregoing the borrower will understand that the Commissioners cannot give credit for unfinished works; and, consequently, no arrangement should, in every case, be made as to the portion of the building which is to be commenced and completed with the amount issued on any instalment.

To enable the Commissioners of Public Works to determine whether any, and to what amount a loan may be made for the proposed works, it is necessary that each memorial be accompanied by plans, specifications, and estimates for the several works to be done, and by a sheet of the Ordnance Townland Map, on which the boundary of the lands to be charged shall have been marked by a yellow marginal line, and the site of the proposed building be shown by a circle in red.

The several drawings should show each floor of the building, and the vertical section both transversely and longitudinally, with the machinery and elevations of the outside—all dimensions being accurately figured.

The drawings should be accompanied by a general description of the manner in which it is proposed to adapt the site to the purpose intended, stating any peculiarities or difficulties it may present, the manner of erecting the building, with an estimate in detail of the cost, and the description of motive power to be employed.

Where water-power is to be used, the particulars relating to it will be required, including a section of the river-course or mill-lead and tail-race, showing the fall that has been or can be obtained, with the average number of cubic feet of water, per minute, supplied by the river or stream during the autumn, winter, and spring in each year.

In cases where any loan has already been made under the Land improvement Acts, for the improvement of the lands on which the Scutch Mill is to be erected, the amount of such loan should be stated.

The appended plans and elevations have been designed for Scutch Mills on the smallest scale that can be admitted; and it is to be understood, that the plans, as well as the dimensions, are intended merely as an index or assistance to landed proprietors who will consider the matter, and, when thought advisable to suit local circumstances, will suggest such alterations in the general arrangements or dimensions of the buildings as may appear to be desirable.

Act 15 & 16 Vic., cap. 34.

SPECIFICATION OF THE PRINCIPAL WORKS

TO BE EXECUTED IN

ERECTING A SCUTCH MILL FOR FLAX.

THE trenches for foundations to be carried to the depth shown on drawings, or to such greater depth as may be necessary to reach a firm substratum; when general excavation is required for basements or inside lying ground, the earth to be removed to at least six inches under lowest floor line.

Where water-power is to be applied, the earthwork, to form the mill-race, tail-race, overflows, &c., to be executed according to plan and sections.

The footing courses for the walls to be formed of flat broad stones well crossed and bonded, and well flushed with mortar; to be at least six inches wider than neat walls of the building; and to be increased, should the nature of the soil appear to require it. The walls to be of rubble masonry, of the heights and thicknesses shown on drawings, carried up in courses not exceeding 14 inches in height, to have a thorough bond every 5 feet, and to be properly hearted, and flushed with mortar. The quoins of the buildings and its various openings to be formed, as may be most convenient, of hammered stone (in every case to be laid on its natural or quarry bed), or of brick bonding, alternately, 9 and 14 inches, with the masonry. The arches over the various openings (as door and windows), to be formed either of brick arches varying from 9 to 18 inches deep, according to width of opening, or with arches of hammered stone or flat flags, where they can be procured, or by a thorough stone lintel. Timber lintels to be set in clear of the reveals, with discharging arches over them. Reveals for doorways to be 9 inches wide, for window opes 4½ inches in brickwork, 6 in stone.

The floor of the dressing-room to be formed of flags, tiles, or hard burnt bricks; or, where none of these can be procured at moderate cost, of mortar, mixed with forge ashes, laid 1½-inch thick in one coat, and carefully trowelled until a hard smooth surface is obtained; in each case cover the earth with 4 inches thick of spawls, gravel, lime-riddling, &c., on which the flags, &c., are to be bedded.

Blocks of ashlar-stone to be set where required for securing the machinery: it will generally be better to leave openings for the blocks, and insert them after the completion of the building, in such manner as the machinist may direct.

The masonry connected with the motive power to be similar to that above described.

Where vaulting is required, it will be generally found expedient to execute it in 9-inch brickwork, laid with a close joint, straight from end to end of vault, rising not less than one-fourth of the span, taking care to increase the thickness of the abutment walls, and to keep the centres up until the whole work is completely consolidated. Should the apartment to be vaulted be longer than 16 feet or 18 feet, without cross walls, it would be expedient to build external buttresses to counteract the thrust of the arch, or introduce tie-rods of iron.

Lay in doorways, thorough-stone cills or jamb-blocks, to take the iron spuds and rings of door frames. Set a cut-stone cill in each window ope.

CARPENTER AND JOINER.

All roof timbers, joists, and lintels, door and window frames to be of memel fir, or red pine.

The roof timbers to be of the following scantlings, viz.:—Rafters, 4½ inches by 2; collar ties, 4 inches by 1½; ridge piece, 7 inches by 1½; wall plates 4 inches by 3; joists for 10 feet bearing, 8 inches by 2; joists for 15 feet bearing, 10 by 2; joists for 20 feet bearing, 13 inches by 2½; plates under joists, 4 inches by 2.

Lintels to be 12 inches longer than the clear ope, and one inch thick for every foot of bearing. All joists and rafters to be spaced 12 inches apart from centre to centre. All wall plates and tassels to be halved and spiked at their crossings. In floors exceeding 16 feet in width, the joists to be bridged with 1½ inch bridging same depth as joists.

The floors to be laid with 1-inch white deals, the edges shot and laid folding.

Doors to be formed of 1-inch deal rebated, beaded and ledged with 1½-inch ledges, chamfered, or beaded on edge. Each door to have one pair strong T hinges, thumb-latch, and good 8-inch stock-lock. Door frames to be 4½ inches by 4, wrought, framed, rebated in the solid, and beaded, secured to cill or to stone blocks by iron spuds and rings. The joggles to be built into the wall.

Sashes to be of 2-inch deal, with moulded or chamfered bar, in small panes; a portion of each sash to be hung on pivot hinges. The sash frame to be of 4 inches by 2, wrought and framed. When shutters are required they are to be of ¾ inch deal, rebated, beaded, and ledged, hung with T hinges so as to fold back against the wall: 1½ inch window boards, rounded on edge, to be fixed to each window on proper bearers.

Gates to be framed of 2½ inch deal, the styles and rails being 9 inches wide, filled in with 1½ inch sheeting, rebated and beaded, flush on outside; to be hung from posts 6 inches by 6, secured at bottom as door frames, and framed at top into the lintel, or from hooks built into the masonry; the hinges to be 3 feet long, out of 2½ feet by ½ iron bolted through the gates;

the gates to be secured by two 18-inch rough bolts to shoot into head and cill, and one 3-foot bolt with hasp and padlock.

The partitions between the stands to be formed, as shown on drawings, of 1 inch deal, planed on one side and rebated.

Stairs to upper floor to be formed of 2-inch deal strings, and 1½ inch treads, planed on both sides, one out of every four to be framed into the strings; post and handrail to be 3 inches by 3, wrought and framed—the strings to be well secured to floor at top and bottom; the joists for trimming round the well hole of stairs, to be increased in thickness ⅛-inch for every joist they have to carry.

SLATER.

The roof to be covered with Bangor, duchess, or countess slates, laid with a 3-inch lap on sawn laths, 16 to the deal, and thorough rendered with haired mortar. Ridges and hips, to be covered with fire-clay ridge tile, carefully bedded in mortar, with a close joint, and pointed in cement.

3½ inches cast-iron semicircular eave shoots, to be fixed to the eaves with a 3-inch stack pipe, with proper head and toe for every sixty feet of run.

GENERAL CLAUSES.

The buildings are to be constructed in accordance with the foregoing specification; where it presents more than one way of executing any portion of the work, the applicant for the loan will erase the method he does not propose to adopt. Should he consider any further variations necessary or desirable a statement of them must be submitted for the Board's consideration.

OFFICE OF PUBLIC WORKS,
September, 1852.

*Ordnance Sheet, No.*________

County of ________

*Barony of*________

LAND IMPROVEMENT,

Acts 10 Vic., c. 32; 12 Vic., c. 23; 12 & 13 Vic., c. 59; 13 & 14 Vic., c. 31; 13 & 14 Vic., c. 113; and 15 & 16 Vic., c. 34.

ESTIMATE

OF THE

EXPENSE OF ERECTING A SCUTCH MILL,

(In one Story,)

*In accordance with the accompanying Plans and Specifications, on the Property of*______

Description of Work.	Quantity.	Rate.				
		s.	*d.*	£	*s.*	*d.*
Excavation, Removing same,	26 cubic yds.	0	3	0	6	6
Masonry, dry,	10yd.	3	0	1	10	0
Do. in Mortar,	70yd.	5	0	17	10	0
Do. labour only, in deductions for Opes,	16 yd.	2	0	1	12	0
Brick Work	15⅓ yd.	12	0	9	2	5
Do. in Cement,						
Extra on Brick Arches,	176⅛ sup. ft.	0	2	1	9	4
Paving or Flagging,	65 yd.	0	9	2	8	9
Roofing, per Square,	9⅛sq.	5	0	16	6	8
Gates and Frames, per foot, superficial,	72 ft.	2	0	7	4	0
Doors and Frames,	52 ft.	0	10	2	3	4
Sashes and Frames,	100 ft.	1	6	7	10	0
Floor and Joists,						
Lintels,	35 ft. lineal	0	5	0	14	7
Breastsummers,	9 ft. 4 in.	0	9	0	7	1
Slating,	10⅛ sq.	35	0	17	14	4
Ridge Tiles,	78 ft.	0	6	1	19	0
Plumbing,						
Ironmongery,						
Painting,				1	0	0
	TOTAL, . . £			88	18	0

*Ordnance Sheet, No.*________

*County of*____________

*Barony of*____________

LAND IMPROVEMENT.

Acts 10 Vic., c. 32; 12 Vic., c. 23; 12 and 13 Vic., c. 59; 13 and 14 Vic., c. 31; 13 and 14 Vic., c. 113; and 15 and 16 Vic., c. 34.

ESTIMATE

OF THE

EXPENSE OF ERECTING A SCUTCH MILL,

(In two Stories,)

*In accordance with the accompanying Plans and Specifications, on the Property of*________

Description of Work.	Quantity.	Rate.				
		s.	*d.*	£	*s.*	*d.*
Excavation, Removing same, } * Assumed, . .	150 yd.	0	3	1	17	6
Forming and Levelling Surface, . .						
Masonry, Dry	20⅓ yd.	3	0	3	1	0
Do. in Mortar	99 yd.	4	9	24	15	0
Do. Labour only, in deductions for Opes	16 yd.	2	0	1	12	0
Brick Work, ...	15⅓ yd.	12	0	9	2	5
Do. in Cement						
Extra on Brick Arches, . . .	176⅛ ft.	0	2	1	9	4¼
Flagging, ...						
Paving, ...	42 ft.	0	9	1	11	6
Roofing, ...	5¼ sq.	35	0	9	3	9
Gates and Frames, ...	72 ft.	2	0	7	4	0
Doors and Frames, ...	52 ft.	0	10	2	3	4
Sashes and Frames, ...	100 ft.	60	6	7	10	0
Floor and Joists, ...	4 sq.	6	0	12	0	0
Lintels, ...	35 ft. lineal	0	5	0	14	7
Breast-summers, 9 x 6,.	9.6	0	9	0	7	1½
Slating, ...	5¾ sq.	35	0	10	1	3
Ridge Tiles,.	68 ft.	0	6	1	14	0
Plumbing,.						
Ironmongery, ...						
Painting, ...				1	0	0
	Total, . . £			95	6	10

ON ECONOMISING THE SEED OF THE FLAX CROP,

AND CONVERTING IT INTO

LINSEED CAKE AND OIL.

THE following passages are extracted from a pamphlet published by Mr. J. De Cock-Kenifeck, Belgian Instructor to the Society:—

"Water power, adapted to machinery for crushing, is abundant throughout the country, and the extensive cultivation of the flax plant, of which the seed, the principal ingredient as cattle food, and the *sine qua non* of the crushing system, now greatly neglected, gives great advantages. What is required is, that these natural and acquired facilities should be brought fully into play in a uniform system, not abruptly, as is too often the case, but steadily and by degrees.

"I am well aware that there are only five crushing mills at present existing in this island, and still a vast deal of their produce must find its market on the other side of the water; it is also a fact that the greater part of the seed comes from abroad.

"Machinery can be attached to any mill of another description at a comparatively trifling expense. On the Flanders system, its erection would not exceed the very moderate sum of £30. Even large farmers provided with any machine power for other purposes may attach such machinery, and convert their crop to its highest market value, with the saving of the rich re-fertilizing ingredients.

"Exhaustion is a word frequently used without its full sense being understood.

"The flax crop is declared exhausting, and with reason, where nothing is returned to the soil; but, if the 5 cwt. of cake meal contained in the product of every acre of flaxseed found its way back to the source from whence it was derived, would it not become the least exhausting of all the Irish-grown crops?

"Taking for granted that 150,000 acres of flax can be produced at an average yield of twelve bushels of seed to the statute acre, we find 1,800,000 bushels, or 45,000 tons.

	QUANTITY OF CAKE.	QUANTITY OF OIL.	VALUE OF CAKE.	VALUE OF OIL.
FLAXSEED:	Tons.	Tons.	£	£
Oil, ...		9,000		250,000
Cake, ...	36,000		306,000	

"As to the amount of the product of the oil (without speaking of the flax fibre keeping its former value), it represents the return of 350,000 acres of oats, at £5 per acre, which grain at present is mostly exported. If the oil took the place of the oats in export, matters would stand in a rather more favourable condition with regard to the Irish producer's fields, the 45,000 tons of seed being capable of employing, during eight months in the year, over 200 small crushing mills, on the Belgian system, for pressing out the oil to different degrees, instead of the five existing at present. The results to be obtained from such a system are fourfold: 1st.—By procuring a suitable market to the flax grower, for his saved seed, and the prompt return of over 300,000 to the agricultural body, yearly, now going to the steep-hole. 2d.—By the probable introduction of oil instead of candles, grease, rushes, &c., as a household comfort, in the lighting up of the premises, at a saving of fifty per cent. in expense. 3d.—By it a generally improved system of feeding farm stock will be introduced, by which a good number of head may be kept over until the more favourable market prices after winter; besides, a better quality of winter butter, another agricultural product deserving much attention, can be produced, for which buyers in the English market are competent judges.

"Feeding on steamed food is, most undoubtedly, a good plan; but, *then*, let the Irish farmer try the Flanders system.

"Since my sojourn in Ireland, and particularly in the South, I have witnessed thousands of bushels of rich flax husks, and very light seed, consigned to the dung-heap, while hundreds of head of cattle were fed either on the dry hay or straw, or on the watery turnips. Let those and all other chaffs be used in the feeding, and, by steaming, brought to a decoction, to moisten or enrich the other food, they will also find their way to the dung-heap, after having performed another office. The cake meal will be the material to form the pudding, and weeds will not be propagated, even in the dung-heap itself, which is often the case at present.

"In a former chapter, I have stated that almost every village in Flanders was provided with machinery to crush all sorts of oleaginous seeds. Two different specimens are existing—the first, commonly worked by horse or small wind or water power, is particularly adapted to large farms. The following are the materials required to crush fully 7 cwt. of seed per diem:—A small steaming-pan; a solid block of dry beech-tree wood, about eight feet long, two feet wide, and twenty inches deep, which is prepared to receive, in the one end, the necessary utensils of a single press, which, by the use of a few small wooden slips, is capable of extracting the oil to different degrees, while, in the other part of the block, two circles of fourteen inches diameter on the surface, are hollowed out, eighteen inches deep, in a diminishing round shape, about twelve inches diameter at the bottom, forming exactly two pots or crocks. On this block, a frame is constructed to keep moving. First, two wooden poles or stampers, about eighteen feet long by one foot diameter, cut at the under end to the form, shape, and diameter of the bottom of the hollowed-out part of the two pots or crocks, in which, by the alternate falling down of the two poles or stampers, the seed is crushed. 2ndly, two other square poles or stampers, to act upon the wedges for pressing out the oil. This set of machinery is of such a simple kind, that the whole concern can be moved by simple horse-power, having only a shaft, to which are attached eight wooden latches, of half-a-square, about eighteen inches in diameter, to lift up the four wooden stampers or poles; a very small communicating shaft, with a little wheel for a continual stirring up of the crushed seed or meal in the steaming-press, completes the concern. It can be erected in the small space of twelve feet by ten, at from £15 to £20 expense. This set of machinery fully answers the purposes of the large farmers, being of great use, also, in the crushing of many other articles required on the farm.

" In the second specimen of machinery, the oil block is provided with two sets of presses. A pair of erect, standing, round, moving stones, from five to five an a-half feet in diameter, and from twelve to fourteen inches width, to crush the seed instead of the wooden poles or stampers, and pots or crocks used in the former. The only material difference existing between this specimen and the present machinery in use in Ireland, consists in the presses being made to finish the cakes through two different processes, the first extracting the oil to a certain degree, while the other finishes the cake; and by a very little increase in the labour a greater per centage of oil is obtained. The operation can also be stopped after the first process, if cake be required with a larger amount of oil. In all cases little power is required, four to eight-horse power being sufficient to reduce daily from fifteen cwt. to one ton of seed to oil and cake. It has been and may still be very naturally observed, with wonder, that in a country like Flanders, where the crushing of all sorts of oleaginous seed has now been so extensively practised for such a long period of time, comparatively very few extensive crushing concerns have been erected, the operation being nearly all performed by wind power. I am far from being a sceptic in modern improvements, particularly in steam power, but it is evident that up to the present the use of steam power in the crushing of oleaginous seeds has never been capable of competing with the existing simple machinery in Flanders; for my part I ascribe it to the following reasons:—in the first place, the expense of forwarding the seed to the manufacturing place is always avoided—being crushed in the very locality of its growth, and the greatest part of the refuse, even the oil, being exchanged on the spot. Secondly, the comparatively little expense of crushing by machinery moved without any outlay for motive power, while also the hands employed by the crusher are alternately used for all the branches of his business.

The real expense for reducing a ton of seed to oil and cake by the small Flemish crusher, may be set down as follows :—

One and a-half days' labour of two men, in-door servants, at stated rates per annum,—say not exceeding 1s. per man per day (the owner of the mill often acting as foreman himself, per ton	£0	3	0
Fuel for steaming pans	0	0	6
Wear and tear for use of crushing machinery, on a value of £40, at 20 per cent. per ton	0	0	7
Wear and tear of outside movement, and store room, say per ton	0	0	5
Total amount per ton	0	4	6

COMPOSITION OF THE STEEP WATER,

PRODUCED BY

WATT'S PROCESS OF STEAMING FLAX.

The following account of some analyses, on this point, was lately given by Professor Hodges:—

Dr. Hodges gave an account of the new process of preparing flax, patented by Messrs. Watt and Leadbetter, which, he said, offered the only practical method of economising the matters which are separated from the flax plant in its preparation for the manufacturer, which had hitherto been proposed. The liquid which remains in the flax vats employed in the new process possessed none of the disagreeable qualities of the ordinary steep waters. It was free from smell, and in taste and colour somewhat resembled an infusion of senna leaves. It was, in fact, a strong tea, containing, unchanged by fermentation or putrefaction, the soluble matters of the stem of the flax plant. It was, at the present time, advantageously used at Messrs Leadbetter's works, in feeding pigs. As it was desirable to ascertain the exact composition of this liquid and its nutritive value, he had procured a sample of it from the Bedford-street works, and had it submitted to chemical examination. The following were the results:—One gallon evaporated to dryness gave

Of organic matters,	353.97	grains.
Earthy and saline matters,	161.49	"
Total amount of solid matters,	515.46	"

The organic matters afforded on analysis 14.79 grains of nitrogen.

The earthy and saline matters were found to possess the following composition:—

COMPOSITION OF THE ASH OF THE STEEP-WATER OF FLAX.

	Per cent.	In a gallon.	
Potash,	27.17	44.63	grains.
Soda,	3.18	5.12	"
Chloride of sodium,	21.58	34.61	"
Lime,	5.91	9.49	"
Magnesia,	4.60	7.40	"
Oxide of iron,	0.83	1.33	"
Sulphuric acid,	15.64	25.11	"
Phosphoric acid,	5.66	9.01	"
Carbonic acid,	12.43	19.96	"
Silica,	3.00	4.83	"
	100.00	161.49	

Dr. Hodges stated that the flax liquid possessed considerable feeding qualities; and Mr. Leadbetter, in reply to his inquiry, said that it had not been found to exhibit any purgative effect. The pigs at his works received it mixed with turnips and the husks of the flax, and were in a thriving, fattening condition. The vat liquid, Dr. Hodges observed, could be drawn off in a more highly concentrated form than the sample examined; and it would be easy for the manufacturer to employ a hydrometer to supply it of uniform strength.

ANNUAL BALANCE SHEET

OF THE

ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

Dr.

1851.				
Oct. 31.—	To balance on hands, ...	£28	2	10
Dec. 11.—	To Government grant for 1851, ...	1,000	0	0
1852.				
May 18.—	To Government grant for 1852, ...	1,000	0	0
Oct. 31.—	" Subscriptions to this date, ...	312	9	0
—	" Accidental receipts, ...	1	3	6
		£2,341	15	4

Cr.

1851.							
Oct. 31.—	By Office:—Rent, Taxes, Fuel, Attendance, &c.,				£45	17	2
—	" Printing and Advertising, ...				57	10	11
—	" Postage and Carriage of Parcels, ...				24	6	2
—	" Stationery, ...				10	10	7
—	" Implements, ...				29	7	4
—	" Sundries, not included in the foregoing items,				24	9	6
—	" Secretary's Salary and allowance for Clerk,				220	0	0
—	" Instructors' Salaries, in full or in part, viz.:—						
	J. De Cock, ...	£91	18	9			
	Hugh Orr, ...	45	7	6			
	Isaac Irwin, ...	41	5	10			
	Samuel Kennedy, ...	33	15	0			
	Samuel Clarke, ...	33	0	0			
	Hugh M'Dowell, ...	30	0	0			
	William Smith, ...	29	10	0			
	W. J. O'Hara, ...	27	0	0			
	Hugh Nelson, ...	26	19	2			
	Henry Haslett, ...	26	10	0			
		£385	6	3			
	Carry forward, ...				£412	1	8

	£	s.	d.	£	s.	d.
Brought forward, ...				£412	1	8
Oct. 31.—By Instructors' salaries, in full or in part, viz, :—						
Over, ...	£385	6	3			
R. F. Patterson, ...	26	0	7			
D. J. Boyle, ...	25	8	0			
Samuel M'Culloch, ...	22	16	0			
John Grennan, ...	22	15	0			
F. B. M'William, ...	17	2	6			
James M'Aree, ...	14	0	0			
James Orr, ...	10	0	0			
William Anderson, ...	10	10	0			
Joseph Patterson, ...	7	0	0			
John Boyd, ...	5	10	0			
William M'Kittrick, ...	5	4	0			
John Sloan, ...	2	10	0			
				553	16	4
Oct. 31.—By Travelling Expenses, viz. :—						
Instructors	£430	8	3			
Deputations, ...	57	11	8			
Secretary, ...	25	5	10			
				513	5	9
By Belfast Banking Co., repaid advances made by them last year, against Government Grant,				584	14	11
" Balance in Bank, ...	116	6	1			
" Do. in Hands, ...	161	10	7			
				277	16	8
				£2,341	15	4

JOHN CHARTERS, }
JAMES CAMPBELL, } AUDITORS.
JAMES MACADAM, JUN., SECRETARY.

SUPPLEMENT,

SHEWING THE RECEIPTS AND DISBURSEMENTS OF THE SOCIETY, FROM ITS FORMATION, 1ST MARCH, 1841, TO 31ST OCTOBER, 1851.

RECEIPTS.

	£	s.	d.
Subscriptions and Donations, ...	£8,386	4	3
Government Grants, ...	5,000	0	0
Repayments for Machinery, ...	249	6	2
Accidental Receipts, ...	33	0	11
	£13,668	11	4

DISBURSEMENTS.

	£	s.	d.
Instructors' Salaries and Travelling Expenses, ...	£9,099	14	7
Secretary's Salary,...	1,695	0	0
Prizes awarded, ...	482	11	0
Machinery and Implements, ...	458	10	0
Printing and Advertising,...	633	4	1
Office Rent, Taxes, Fuel, &c., ...	349	1	10
Postage and Carriage, ...	174	16	6
Stationery,...	88	0	8
Sundries, not included in the foregoing items, ...	409	16	0
	£13,390	14	8
Balance on hands 31st Oct., 1852, ...	277	16	8
	£13,668	11	4

JOHN CHARTERS, }
JAMES CAMPBELL, } AUDITORS.
JAMES MACADAM, JUN., SECRETARY.

CONTRIBUTIONS TO SOCIETY'S FUNDS.

	1841 to 1851.			1852.		
HIS ROYAL HIGHNESS PRINCE ALBERT,	£25	0	0			
Abercorn, the Marquis of,	50	0	0	£5	0	0
Aberdeen, Gordon, & Co., Montrose,	10	0	0			
Adair, A. Shafto, M.P., Ballymena,	40	0	0	5	0	0
Adair & Gunning, Cookstown,	80	17	0			
Agnew, James, Cairncastle Lodge, Larne,	25	0	0			
Ainsworth, H., Cleator, Whitehaven,	10	0	0			
Alexander, Henry,	1	1	0			
Alexander, John, Millford, Carlow,	2	2	0			
Alexander, John, Newtownlimavady,	5	0	0			
Alexander, N., M.P., Portglenone,	81	6	0			
Algeo, Captain, Armagh,	5	5	0			
Allen, Dr. J.,	10	0	0			
Allen, John Read, Mount Panther, Co. Down,	5	0	0			
Allen, W.,	4	0	0			
Anderson, Henry, Ballinacree, County Antrim,	1	1	0			
Andrews, J. & Sons, Comber,	19	9	0	1	1	0
Andrews, Michael, Ardoyne,	6	6	0	1	1	0
Annesley, Viscount, Castlewellan,	4	4	0			
Arbuckle, Lieut.-Col., R.A., Donaghadee,	2	2	0			
Armstrong, William, Lurgan,	4	4	0			
Armstrong, W. Jones, Kippure Park, Blessington,	5	5	0			
Atkinson, Henry, Moy,	1	1	0			
Atkinson, W. S., Portadown,	1	1	0			
Aytoun, James, Kirkcaldy,	2	0	0			
Bacon, Edward, Thorock-hall, Lincoln,	12	12	0			
Baker, Thomas, & Son, London,	2	0	0			
Balfour, Alexander, Kirkcaldy,	1	0	0			
Ballymahon Flax Committee, Co. Longford,	10	0	0			
Bandon Branch, County Cork,	10	0	0	10	0	0
Bangor, Viscount,	6	0	0	2	0	0
Bankhead, J. B. Glenarm,	10	10	0	1	1	0
Bantry Branch, County Cork,	10	0	0			
Barbour, William, Lisburn,	2	2	0			
Barcroft, J. & N., Stramore,	2	2	0			
Barklie, A. & G. Mullamore,	10	0	0			

	1841 to 1851.			1852.		
Barklie, William, Armagh,	£1	1	0			
Barnett, Thomas, & Co.,	1	1	0			
Barter, Dr., Blarney, County Cork,	2	2	0			
Barton, F. W., Clonally, Kish,	2	2	0			
Bates, John, Belfast,	9	9	0	£1	1	0
Bateson, Sir R. Bart., Belvoir Park,	59	19	0	2	2	0
Bateson, Thomas, M.P., Derry,	1	1	0	1	1	0
Bath, Marquis of,	5	0	0			
Batt, Thomas, Purdysburn,	5	0	0			
Beattie, John, Portadown,	1	0	0			
Bells & Calvert, Whitehouse,	56	6	0	2	2	0
Bell, John, & Co., Whitehaven,	1	0	0			
Bell, J. & W. L., & Co., Ballyclare,	1	1	0			
Bell, Thomas, & Co., Lurgan,	6	6	0	1	1	0
Bennett & Adams, Ballydevitt, Co. Derry,	2	2	0	2	2	0
Bennett, Thomas, Coleraine,	3	3	0			
Bennett, William, Ross, Herefordshire,	5	0	0			
Benyon & Co., Leeds,	10	0	0			
Beresford, J. B. Learmount, Co. Derry,	5	0	0			
Bernard & Koch, Cregagh, Co. Down,	7	7	0			
Berry, Joseph, Moira,	1	1	0			
Besnard, Julius, Cork,	1	1	0			
Bessborough, Earl of,	10	0	0			
Bianconi, C., Longfield, Cashel,	10	0	0			
Bicknell, George, Kilrea,	5	5	0	1	1	0
Bigger, Lennox, Dundalk,	1	1	0			
Birch, J. Ballybeen, Co. Down,	10	0	0			
Birley, J., & Sons, Kirkham, Lancashire,	155	0	0			
Birney, J., Lisburn,	4	4	0	1	1	0
Bishop Sterne's Charities,	6	0	0	3	0	0
Black, Henderson, Dromara,	2	2	0			
Black, H., Belfast,	1	1	0			
Blacker, W., Armagh,	1	1	0			
Blackwood, James, Strangford,	4	4	0			
Blackwood, William,	2	0	0			
Blakely, Rev. F., Moneyrea,	6	6	0	1	1	0
Blakely, T., M.D.,	1	0	0			
Bland, Rev. R., Whitehouse,	1	1	0			
Blundell, Francis, Navan,	18	14	10			
Boomer, J., & Co., Belfast,	93	11	0	5	0	0
Booth, Sir R. Gore, Bart., M.P., Sligo,	1	1	0			
Borthwick, John, Kilroot,	8	8	0	1	1	0
Boyd, James, B., Ballier, Armagh,	2	2	0			
Bouch, Joseph, London,	1	1	0			
Boyd, John, & Co., Belfast,	73	3	8			

	1841 to 1851.			1852.		
Boyd, J. E., Letterkenny,	£2	2	0			
Boyd, Robert, Belfast,	1	0	0			
Boyle, Gill, & Co., Leeds,	3	1	0	£1	1	0
Brady, Captain R., Oaklands, Cookstown,	5	0	0			
Briggs, Thomas, Manchester,	...			1	1	0
Brooke, B. G., Moyaver, County Antrim,	2	2	0	1	1	0
Brooke, Sir A. B., Bart., M.P., Brookborough,	10	0	0	5	0	0
Brooks, John, Bolton.	10	0	0			
Brown, J., & Sons, Donacloney,	6	6	0			
Brown, J. & W. Dundee,	5	0	0			
Brown, R. Clayton, Carlow,	1	0	0			
Brown, Robert, Belfast,	5	0	0			
Brush, C. M., Dromore,	1	1	0			
Bryan, Lieut.-Col., Jenkinstown, Kilkenny,	1	0	0			
Buckley, Henry, Hillsborough, Roscrea,	1	1	0			
Bucknall & Son, Liverpool,	...			1	1	0
Bucknall, H. W., Somersetshire,	...			1	1	0
Buist, A. J., Dundee,	10	6	0			
Burgess, J. Y., Parkanour, Dnngannon,	1	1	0			
Butler, Thomas, Kilkenny,	3	3	0			
"B," Birmingham,	1	1	0			
Cairns, William, Drogheda,	2	0	0			
Caledon, Earl of	47	0	0	5	0	0
Camm, S. & Co., Manchester,	2	0	0			
Campbell, Henry, Belfast,	10	0	0			
Carlow Branch,	10	0	0			
Carty, Cairns, Rogers, & Co., Drogheda,	5	0	0			
Cassidy, Robert, Magherafelt,	1	1	0			
Castlebridge Farming Society, Co. Waterford,	10	0	0			
Cather, David, Newtownlimavady,	1	1	0			
Caulfeild, Hon. Henry, Hockley, Armagh,	10	10	0	1	1	0
Charlemont, Earl of,	43	0	0			
Charley, John, Finaghy, Dunmurry,	25	0	0			
Charley, J. & W., & Co., Seymour-hill,	10	10	0	2	2	0
Charley, Hill, Belfast,	1	1	0			
Charley, M., Woodburn,	3	3	0			
Charley, J. Stouppe, Arranmore,				1	1	0
Charters, John, & Co., Belfast,	5	0	0	5	0	0
Clancarty, Earl of,	6	6	0	1	1	0
Clarendon, Earl of,	10	0	0			
Clarke, G. J., Steeple, Antrim,				1	1	0
Clarke, R., Bailieborough,	1	0	0			
Clarke & Innes, Drogheda,	5	0	0			
Clements, Hon. C. S., M.P., Milford,	5	0	0	5	0	0

	1841 to 1851.			1852.		
Clermont, Lord, Ravensdale, Co. Louth,	£20	0	0	£5	0	0
Clonbrock, Lord,	10	0	0			
Clonakilty Branch, Co., Cork,	10	0	0			
Close, Lieutenant-Colonel, Drumbanagher,	15	0	0			
Clothworkers' Company, London,	30	0	0			
Coates & Young, Belfast,	36	0	0	2	2	0
Coddington, H., Oldbridge, Meath,	1	0	0			
Cogry Mill Company, Doagh,	5	0	0			
Cole, Hon. John, Florence-court,	2	0	0	1	0	0
Collum, John, Enniskillen,	1	1	0			
Conolly, Thomas, M.P., Cliff, Ballyshannon,	10	0	0	5	0	0
Conyngham, W. L. Cookstown,	1	0	0			
Cook, William, London,	20	0	0			
Cooper, E. J., Markree Castle, Sligo,	1	1	0			
Cootehill Branch,	15	0	0			
Cope, A. W., Drumilly, Loughgall,	5	0	0			
Cope, R., Manor House, Loughgall,	1	1	0	1	1	0
Coulson, Brothers, Lisburn,	13	3	0			
Coulson, James, Lisburn,	2	2	0	1	1	0
Coulter, Richard, Newry,	1	1	0			
Courtown, Earl of,	20	0	0			
Cowan, W., & Co., Whiteabbey,	29	4	0			
Crace, H., Belfast,	1	1	0			
Craig, A. W., Belfast,	10	0	0	3	3	0
Cramsie, John, Belfast,	8	8	0			
Crawford, J. S., Crawfordsburn,	4	4	0	1	1	0
Crawford, W. S., Crawfordsburn,	38	18	0	2	2	0
Crawford & Lindsays, Banbridge	4	4	0			
Cremorne, Lord,	25	0	0			
Crichton, Hon. Colonel, Crom Castle,	4	4	0			
Crosbie, W. T., Ardfert Abbey, Tralee,	1	1	0			
Cuppage, J., & Co., Lurgan,	33	8	0	1	1	0
Curell, J. & D., Belfast,	25	0	0			
Curtis, Patrick, Dublin,	2	2	0			
Dargan, William, Dublin,	40	0	0	10	0	0
Darley, Rev. J., Dungannon,	1	0	0			
Davison, A. & J., Broughshane,	30	1	0	2	2	0
Davison, Richard, M.P., Belfast,				1	1	0
Dawson, Rev. J. M., Tipperary,	4	4	0			
Denison, R., Pocklington, Yorkshire,				1	1	0
De Ros, Lord, Strangford,	5	5	0	2	0	0
De Ros, Lady, Strangford,	2	0	0			
Derry, the Lord Bishop of,	10	0	0			
De Salis, the Count, Tandragee,	6	1	0			

	1841 to 1851.			1852.		
Despard, Mrs., Queen's County,	£1	0	0			
De Vere, Sir Vere, Bart., Curragh-chase, Adare,	2	2	0			
De Vesci, Viscount,	30	0	0			
Devonshire, the Duke of,	5	0	0			
Dewhurst, J., & Co., Preston,	2	2	0			
Dobbin, Leonard, Armagh,	1	1	0			
Donegall, the Marquis of,	5	0	0			
Douglas, Charles, Gracehall, Lurgan,	5	0	0			
Down, the Lord Bishop of,	9	9	0	£3	3	0
Downshire, late Marquis of,	55	0	0			
Downshire, present Marquis of,	820	0	0	25	0	0
Doyne, Charles J., Wells, Co. Wicklow,	1	1	0			
Drapers' Company, London,	20	0	0	5	0	0
Drogheda Branch,	25	0	0			
Dromore, the Very Rev. the Dean of,	2	2	0			
Druitt, Thomas, Donacloney,	2	2	0			
Duff, Admiral, Elgin,	2	2	0			
Dufferin, Dowager Lady, Clifton,	15	0	0			
Dufferin and Claneboye, Lord,	7	2	0	2	0	0
Duffin, C., & Co, Belfast,	6	6	0			
Dunbar, M'Master, & Co., Gilford,	172	18	0			
Dungannon, Viscount,	10	0	0	5	0	0
Dunmanway Branch, Co Cork,	10	0	0			
Dunmurry Spinning Company,	6	6	0	2	2	0
Durham, A., Belvidere, Co. Antrim,	2	2	0			
East Mill Company, Brechin,	2	0	0			
Edward, A. & D., & Co., Dundee,	5	0	0			
Enniskillen, Earl of,	8	0	0	4	0	0
Erne, Earl of,	50	0	0	5	0	0
Evans, T. K., Armagh,	1	0	0			
Ewart, W., & Son, Belfast,	25	0	0	2	2	0
Falls Mill Company,	148	11	0			
Fane, Cecil, Willey Hall, Shropshire,				1	1	0
Farmer, Sir G. R., Bart., Bideford, Devon,	1	1	0			
Ferguson, J. F., Belfast,	9	4	0			
Ferguson, J. S., & Co., Belfast,	27	2	0			
Ferguson, Sir R. A., Bart., M.P., Derry,	10	0	0			
Ferguson, T., & Sons, Whiterock,	2	2	0			
Fethard Flax Society, Co. Tipperary,	10	0	0			
Filgate, W., Co. Louth,	1	1	0			
Filgate, F., Hillsborough,	2	2	0	1	1	0
Fisher, John, & Co., Belfast,	14	7	0			
Fishmongers' Company, London,	40	15	0	5	0	0

	1841 to 1851.	1852.
Fitzpatrick, Right Hon. J. W., M.P.,	£10 0 0	
Fitzpatrick, R. W., Granston Manor,	10 0 0	
Fletcher, Alexander, & Co., Glasgow,	68 15 0	£5 0 0
Foott, H. B., Carigacunna Castle, Cork,	1 1 0	
Forsythe & Orr, Belfast,	47 6 0	
Foster, R. Springfield, Dungannon,	2 2 0	
Gailey, Daniel, Coleraine,	1 1 0	
Galmoy Farming Society, Co. Kilkenny,	15 0 0	
Gamble, J. & W., Carrickfergus,	6 1 0	
Gartland, T. M'E., Carrickmacross,	1 1 0	
Gascoyne, Misses, Kilfinane, Co. Limerick,	10 0 0	
German, Petty, & Company, Preston,	115 0 0	
Gervais, Rev. F., Cecil, Augher,	8 8 0	
Gibson, James, Belfast,	2 2 0	1 1 0
Gihon, William, & Sons, Ballymena,	6 6 0	1 1 0
Given, A. Newtownlimavady,	23 18 0	
Gladstone, John, London,	5 0 0	
Glasgow & Wood, Cookstown,	1 1 0	
Glendinning, H. Portadown,	1 1 0	
Goddard, James, Belfast,	6 1 0	
Gordon, R. F., Craigdarragh, Co. Down,	2 2 0	1 1 0
Gore, Col. A. K., Beleek Manor, Ballina,	2 2 0	
Gore, R. Ormsby, Mayo,	1 1 0	
Gosford, Lord,	20 0 0	
Græme, Major, Crieff, Perthshire,	1 1 0	1 1 0
Gradwell, Chadwick, & Co., Drogheda,	62 10 0	5 0 0
Graham, William, Lisburn,	1 0 0	
Grandison, Thomas, Orisaba, Mexico,	1 1 0	
Gray, William, & Sons, Whitehouse,	10 0 0	
Green, James, & Co Keady,	18 7 4	
Greer, George, Lurgan,	11 11 0	1 1 0
Greer, James,	3 3 0	
Greg, Thomas, Ballymenoch,	2 2 0	1 1 0
Greville, Algernon,	1 1 0	
Grimshaw, Edmund, Mossley,	70 0 0	3 0 0
Grimshaw, James, & Sons, Whitehouse,	87 12 6	5 0 0
Gunning & Campbell, Belfast,	2 2 0	1 1 0
Gunning & Quarrell, London,	2 0 0	
Hall, Roger, Narrowwater-Castle, Newry,	41 14 0	2 2 0
Hancock, John, Lurgan,	10 10 0	1 1 0
Hancock, Professor, Belfast,	2 2 0	1 1 0
Harden, James, Harrybrook, Co. Armagh,	1 1 0	
Hardy, C.,	5 0 0	

	1841 to 1851.			1852.		
Hardy, J.,	£1	1	0			
Harris, J. Porter, Ashfort, Tynan,	1	1	0			
Harrison, John, Mertoun, Belfast,	1	1	0	£1	1	0
Hawkshaw, Lieut.-Col., Blaris Lodge,	2	2	0			
Hay, Brothers, & Co., Ballina,	1	1	0			
Hayes, F. W., Seapatrick, Banbridge,	4	12	0			
Hayes, Richard, Millmount, Banbridge,	2	2	0			
Hemphill, Hunter, & Co., Greenfield, Coleraine,	16	16	0	2	2	0
Henderson, Mr.,	1	0	0			
Henry, J. & W., Kirkcaldy,	1	0	0			
Henning, John, Waringstown,	20	15	0	2	2	0
Henry, George, Tassagh, Keady,	2	2	0			
Herdman, J. & J., & Co., Belfast,	99	16	0	5	0	0
Herdmans & Co., Strabane,	6	5	0			
Heron, Hugh, Banbridge,	1	0	0			
Hertford, late Marquis of,	100	0	0			
Hertford, present Marquis of,	175	0	0	25	0	0
Heuzè, M., Landerneau, France,	1	0	0			
Hewitt, Hon. and Rev. J.P.,	1	0	0			
Heyland, Langford, Portglenone,	...			1	1	0
Heyn, Gustavus, Belfast,	4	4	0	1	1	0
Heytesbury, Lord,	10	0	0			
Higginson, Henry, Leeds,	1	0	0			
Higginson, Wm., Leeds,	1	1	0			
Hill, Lord George A., Gweedore,	6	1	0			
Hill, Lord A. Edwin, M.P.,	10	0	0	5	0	0
Hillsborough, Earl of,	2	0	0			
Hincksman, Furness, & Co., Preston,	70	0	0			
Hind, John, & Sons, Belfast,	5	0	0	5	0	0
Hives & Atkinson, Leeds,	40	0	0			
Houston, R. B. B., Orangefield,	24	14	0	2	2	0
Hudson, William, Mount-Caulfield, Newry,	2	0	0			
Hull, Wilson, & Co., Belfast,	87	19	0			
Hull, Hart, & Co.,	4	4	0			
Hunter, & M'Kisack, Belfast,	1	1	0			
Hurst, C.,	1	1	0			
Hutchinson, John, Tandragee,	1	1	0			
Idrone Farming Society, County Carlow,	10	0	0			
Inistioge Farming Society, Co. Kilkenny,	10	0	0			
Irish Society, the Hon., London,	55	0	0	10	0	0
Ironmongers' Company, London,	10	0	0	5	0	0
Irwin, Crommelin, Newgrove, Belfast,	1	1	0			
Irwin, J. R., Carnagh, Keady,	2	2	0			

	1841 to 1851.	1852.
Jackson, F., Roscrea, ...	£1 1 0	
Jackson, J. K., ...	1 1 0	
Jackson, Thomas, Workington, ...	1 1 0	
Jackson, Thomas, Belfast, ...	2 2 0	
Jackson, William, ...	1 0 0	
Jaffe, Brothers, Hamburgh, ...	1 0 0	
Jamieson, Henry, Clonmel, ...	1 0 0	
Jobling, E. Carlisle, ...	1 1 0	... £1 1 0
Johnson, John, Moy, ...	1 1 0	
Johnston, Joseph, Knappagh, Armagh, ...	1 1 0	
Jones, John, Templeranney, Arklow, ...	1 1 0	
Jones, Lewis G., Wood-Hill, Dromore West,	1 1 0	
Jones, Miss, Kilwaughter-Castle, Larne, ...	2 0 0	
Jones, Major, Drumard, Co. Leitrim, ...	1 1 0	
Kavenagh, Lady Harriet, Kilkenny, ...	1 0 0	
Kavenagh, J. B., Newtownlimavady, ...	1 1 0	
Kay, James, & Son, Manchester, ...	57 10 0	
Kempson, William, Bromyard, England, ...	2 2 0	
Kennedy, James, & Sons, Belfast, ..	23 16 0	.. 2 2 0
Ker, David S., M.P., Montalto, Co. Down, ...	10 0 0	
Kilkenny Branch, ...	10 0 0	
King, Henry, Dungiven, ...	2 2 0	
King, James, ...	1 1 0	
King, Michael, ...	1 0 0	
Kingston, A. C., Longford, ...	1 1 0	
Kinmond, Peter, Dundee, ...	1 0 0	
Kinmond & Hill, Dundee, ...	1 0 0	
Kirk, William, M.P., Keady, ...	4 2 0	
Kirkpatrick, Dr., Dublin, ...	3 3 0	... 1 1 0
Kirwan, Denis, Castlehacket, Tuam, ...	8 3 0	
Knox, J. & W., Kilburnie, Ayr, ...	1 0 0	
Knox, M. W., Arthurstown, Wexford, ...	...	... 1 1 0
Lalor, Patrick, ...	1 1 0	
Lancey, Captain, Newtownlimavady, ...	1 0 0	
Landall, D., & Co., Kirkcaldy, ...	1 1 0	... 1 1 0
Lansdowne, Marquis of, ...	10 0 0	
Larne Farming Society, ...	10 0 0	
Lascelles, Rev. R. P., ...	1 1 0	
Law, Samuel, Banbridge, ...	29 12 0	
Leadbetter, J., & Co., Belfast, ...	4 4 0	... 2 2 0
Leadbetter, Adamson, & Co., Blairgowrie, ...	2 0 0	
Leathem, J. & W., Derry, ...	5 0 0	
Lee & M'Kinstry, Armagh, ...	1 1 0	

	1841 to 1851.			1852.		
Ledlie, George, Cogry,	£1	1	0			
Le Hunte, George, Astramont, Wexford,				£1	1	0
Leinster, Duke of,	30	0	0			
Leslie, C. P., M.P., Glasslough,	45	0	0			
Leslie, Edmund, Donaghadee,	3	3	0			
Leslie, Rev. E., Annahilt,	4	0	0			
Leslie, William, Donaghadee,	1	1	0			
Lewis, A. G., Monaghan,	1	1	0			
Limerick Agricultural and Flax Society,	10	0	0			
Lindsay, D., Ashfield, Dromore,	7	6	0	1	1	0
Littledale, A. H., Bolton-Hall, Lancashire,	1	1	0			
Lloyd, R.,	1	1	0			
Local Agricultural Fund,	100	0	0			
Londonderry Farming Society,	15	0	0			
Londonderry, Marquis of,	30	0	0			
Louth Farming Society,	15	0	0			
Lowry, Joseph, Belfast,	2	2	0			
Lawson, Andrew, Arbroath,	4	0	0			
Lucan, Earl of, Castlebar,	15	0	0			
Lucas, Right Hon. E., M.P.,	1	1	0			
Lucas, F. M.P., Dublin,	£2	2	0	1	1	0
Ludolf, H., Leeds,	1	1	0	1	1	0
Lurgan, late Lord,	145	0	0			
Lurgan, present Lord,				10	0	0
Magill, S. R. Cookstown,	3	1	0			
Mahoney, Rev. Denis, Kenmare,	5	0	0			
Malcolm, A. G. Kirkcaldy,	1	1	0			
Malcolm, James, Lurgan,	6	6	0	1	1	0
Mann, A. & Son, Arbroath,	4	2	0			
Marley, Gabriel, London,	1	0	0			
Marshall & Co., Leeds,	225	0	0			
Marshall & Co., Patrington,				2	2	0
Martin, John, jun., Killileagh,	38	4	0	2	2	0
Massareene, Viscount,				3	0	0
Matthew, John, Rathcloheen, Cashel,	1	1	0			
Matthew, Very Rev. T., Cork,	2	2	0			
Maxwell, J. W., Finnebrogue, Co. Down,	10	10	0			
Maxwell, R. P., Groomsport, Co. Down,	2	2	0	1	1	0
Mayo, Earl of,	5	0	0			
Meade, Hon. General, London,	30	5	0	5	0	0
Mell Mill Company, Drogheda,	14	6	3			
Mercers' Company, London,	80	0	0	5	0	0
Metcalf, J. & G., Pateley-Bridge, Ripon,	2	2	0			
Middleton Union Farming Society, Co. Cork,	15	0	0			

	1841 to 1851.			1852.		
Millar, Alexander, Ballycastle,	£1	1	0			
Millar, Rowley, Moneymore,	1	1	0			
Milne, Cruden, & Co., Aberdeen,	25	0	0			
Molony, James, Kiltanon, Co. Clare,	2	2	0			
Monaghan Branch,	15	0	0			
Monkstown Spinning Company, Whitehouse,	35	18	0	£2	2	0
Monsell, Wm,, M.P., Tervoe, Limerick,	2	0	0			
Monteagle, Lord,	10	0	0			
Moore, Henry, Barne, Co. Carlow,	1	0	0			
Moore, James, Moorefort, Co, Antrim,	3	0	0			
Moore, J. S., Ballydivity, Co. Antrim,	5	0	0			
Moore, Samson, Ballynacree, Co Antrim,	5	0	0			
Morfit, John, Leeds,	21	0	0	3	3	0
Mortimer, R., Carrick-on-Shannon,	1	1	0			
Mulhollands, Belfast,	100	0	0			
Mulholland, A. & Son, Belfast,	166	13	0			
Mulholland, S. K., & Hinds, Belfast,	149	6	0			
Mulholland, William, Belfast,	2	10	0			
Munn, John, jun., Londonderry,	20	0	0			
Murdoch, William, Monaghan,	1	1	0			
Murland, James, Castlewellan,	95	0	0			
Murphy, John, & Co., Linfield, Belfast,	17	10	0			
MacAdam, Brothers, & Co., Belfast,	13	8	0	2	2	0
Macart, Dr., Dromore,	2	2	0			
Macartney, G., M.P., Lissanoure-Castle,	26	1	0			
Macauley, Patrick, Randalstown,	23	9	0			
M'Cartan, J., Waringstown,	6	6	0	1	1	0
M'Causland, M,, Newtownlimavady,	5	0	0			
M'Clelland, James, Banville,	4	4	0			
M'Clelland, William, Dromore,	5	5	0	1	1	0
M'Clintock, H. Stanley, Randalstown,				1	1	0
M'Clure, Thomas, Belfast,	2	2	0			
M'Connell, & Kennedy, Belfast,				2	2	0
M'Donald, A., & Co., Kirkcaldy,	1	1	0			
M'Donnell, E., Glenarm-Castle,	12	8	0			
M'Gaw, William,	1	0	0			
M'Gildowney, J., Ballycastle,	1	0	0			
Mackay, James,	1	1	0			
M'Kean, Henry, Keady,	1	1	0			
M'Kee, John, Keady,	1	0	0			
M'Kenzie, Alexander,	1	1	0			
M'Kibbin, R., M.D., Ballymacarrett,	31	0	0			
M'Kinstry, Lee, Armagh,	1	1	0			
M'Murray, G., & Co., Waringstown,	2	10	0			

	1841 to 1851.			1852.		
M'Murray, Thomas, & Co., Dromore,	£16	2	0	£2	2	0
M'Naghten, Sir E. C. W., Bart., Bushmills,	2	2	0			
M'Naghten, Sir F. W., Bart., Bushmills,	12	10	0			
M'Naghten, B., Ballyboggy, Coleraine,	11	11	0			
M'Neece, Rev. F.,	1	1	0			
M'Neill, J., Parkmount, Belfast,	13	8	0			
Macoun, John, Kilmore,	1	0	0			
M'Peake, W., Ballymena,	1	1	0			
M'Watty, James, Castleblaney,	1	1	0			
Nelson, John, & Co., Selby,				1	0	0
Nenagh Agricultural Society,	10	0	0			
Nesbitt, John, London,	7	2	0			
Newry and Mourne, Viscount, M.P.,	26	5	0			
Newton, P. J., Dunleckney, Carlow,	2	0	0			
Nicholson, George, Donacloney,	1	1	0			
Nicholson, John, New York,	4	8	0	1	1	0
Nicholson, Joseph,	2	2	0			
Nicholson, R., Donacloney,	1	1	0			
Nicholson, William, Donacloney,	1	1	0			
Niven, Richard, Chrome-hill,	11	11	0	1	1	0
Norris, John, Camowen, Omagh,	8	8	0	1	1	0
Norrie, C., & Sons, Dundee,	1	1	0			
Nugent, Colonel, Portaferry,	15	0	0			
O'Brien, W. S., M.P., Cahirmoyle,	1	1	0			
Ogilby, Sir J., Bart., Baldovan, Perthshire,	1	0	0			
Oliver, W., Spring-Lodge, Kilfinane,	1	0	0			
O'Neil, Viscount,				5	0	0
Orr, Andrew,	1	1	0			
Orr, William, & Sons, Glenalina,	1	1	0			
Overend, J., & Co., Darlington,	1	1	0			
Palmerston, Viscount,	1	1	0			
Parker, Preston, & Co., Belfast,	5	0	0			
Paton, J. & G., Montrose,	10	5	0			
Patrick, J., & Sons, Ballymena,	5	5	0	1	1	0
Patton, William, Armagh,	1	1	0			
Peel, Right Hon. Sir Robert, Bart.,	25	0	0			
Percival, Spencer, Finnebrogue, Co. Down,	1	1	0	1	1	0
Phibbs, William, Seafield, Sligo,	1	1	0			
Pike, Jonathan, Coalisland,	1	0	0			
Pirrie, William, Belfast,	1	1	0			
Porter, H. J., Tandragee,	2	2	0			
Porter, Rev. J. G., Lisbellaw, Enniskillen,	1	1	0	1	1	0

	1841 to 1851.			1852.		
Porter, J. G. V., Kilskerry, Trillick,	£1	0	0	£1	1	0
Powerscourt, Representatives of Viscount,	25	0	0	5	0	0
Praeger, John, Belfast,				1	1	0
Prentice, H. L., Caledon,	10	10	0	1	1	0
Preston, John, & Co., Belfast,	8	8	0	1	1	0
Price, James, Saintfield,	10	10	0	1	1	0
Price, Nicholas, Saintfield,	20	0	0			
Price, Sir Charles, & Co., London,	10	0	0			
Primate, The Lord,	23	0	0	3	0	0
Provincial Bank of Ireland,	20	0	0			
Quarell, Francis, London,	1	1	0			
Quinn, James, Dromore-House,	1	1	0			
Quinn, James Henry, Newry,	1	1	0			
Quinn, Peter, Dromore-House,	1	1	0			
Ram, Stephen, Ramsfort, Wexford,	1	1	0			
Ranfurley, Earl of,	42	0	0	5	0	0
Reilly, J. T., Scarva, Loughbrickland,	8	6	0	1	1	0
Renny, Sons, & Co., Arbroath,	7	7	0	1	1	0
Renshaw, W., & Co., Manchester,	10	10	0	2	2	0
Richards & Co., Aberdeen,	25	10	0			
Richardson, Brothers, & Co., Belfast,	75	10	0	2	2	0
Richardson & Co., Lambeg,	61	10	0	5	0	0
Richardson, H., Somerset, Coleraine,	12	11	0			
Richardson, Miss J., Richhill,	24	12	0	2	2	0
Richardson, J. G., Newry,	2	2	0			
Richardson, J. & T., & Co., Springfield,	9	7	0	1	1	0
Richardson, Samuel, & Co., Lisburn,	30	0	0			
Richardson, J. J., Lisburn,	8	8	0	2	2	0
Richardson, J. N., Sons, & Owden, Belfast,	102	10	0	5	0	0
Roberts, John, Collin, Lisburn,	4	4	0	1	1	0
Robinson, George, Drimoleague, Co. Cork,	1	1	0			
Roche, E. B., M.P., County Cork,	5	0	0			
Roddy, Robert, Belfast,	5	5	0	1	1	0
Roden, Earl of,	10	0	0			
Rollo, R., Moyfort, Ballina,	1	1	0	1	1	0
Rome, Joseph, Carlisle,	1	1	0	1	1	0
Roscrea Branch,	10	0	0			
Ross, D. R., M.P., Rosstrevor,	10	0	0			
Rossmore, Lord,	5	0	0			
Rowan, Major, Merville,	22	6	0			
Rushout, the Hon. Capt., M.P., Worcester,	1	1	0			
Rutherford & Co., Dunfermline,	2	2	0			
Russell, James, Dunlewey, Co. Donegal,	2	2	0			

	1841 to 1851.			1852		
Russell, Matthew, Newry,	£1	1	0			
Sadler, Fenton, & Co., Belfast,	10	8	0	£2	2	0
Sadler, S. & Co., London,	2	0	0			
St. Leger, Hon. A. B., Adare, Limerick,	2	0	0			
Salters' Company, London,	10	10	0			
Saunders, Miss, Fortgranite, Baltinglass,	1	1	0			
Saunders, R. F., Baltinglass,	1	0	0			
Savage, John, Belfast,	2	2	0	1	1	0
Scott, Major, Willsbro', Derry,	1	1	0			
Seaver, Captain J., Heath-Hall, Newry,	5	0	0			
Shaw, Edward, & Co., Belfast,	24	2	0			
Shaw & Houghton, Celbridge,	62	10	0			
Shaw, Joseph, Templemills, Celbridge,	27	10	0			
Shaw, William,	15	0	0			
Shirley, Evelyn, P., M.P., Lough Fea,				5	0	0
Shuldham, Lieutenant-General, Dunmanway,	2	2	0			
Shouldham, John, Ballymahon,	1	1	0	1	1	0
Simms, William, Belfast,	4	4	0	1	1	0
Simpson, John,	1	0	0			
Skibbereen Branch, Co. Cork,	15	0	0			
Skinner, C. G. M'G., Dundrum,	3	3	0	1	1	0
Sligo Branch,	10	10	0			
Sligo, Marquis of,	10	0	0			
Smyth, John, & Co., Banbridge,	27	2	0			
Smyth, Ralph, Drogheda,	1	0	0			
Spencer, Lawrence, & Co., Preston,	2	2	0			
Sproul, John, Dublin,	1	0	0			
Staples, Edmund, Queen's County,	1	1	0			
Staples, Sir T., Bart., Lissan, Co. Tyrone,	5	0	0			
Stevenson, J. & W., Roan Mills, Dungannon,	6	5	0			
Stewart & M'Clelland, Ligoneil,	99	19	2			
Stewart & Savage, Lisburn,	22	10	0			
Stewart, R., & Sons, do.,	14	8	0	1	1	0
Storar, Thomas, & Co., London,	12	8	0	2	2	0
Stoney, Isaac, Gilford,	1	0	0			
Story, A., Carrick, Co. Fermanagh,	1	0	0			
Stradbally Flax Society, Queen's Co.,	10	0	0			
Straker, William, London,	1	1	0			
Stringer, Captain, Tynan,	1	0	0			
Stronge, Sir J. M., Bart., Tynan-Abbey, Armagh,	18	18	0	2	2	0
Sturrock, John, Dundee,				1	1	0
Stuart de Decies, Lord,	5	0	0			
Sullivan, John, Kinsale,	1	0	0			
Swan, P. D., Kirkcaldy,	2	0	0			

	1841 to 1851.	1852.
Symes, John, Ballina, ...	£2 2 0	... £1 0 0
Taylor, Hon. and Rev. E., Ardgillan, ...	5 0 0	
Templeton, Viscount, ...	70 0 0	
Tennent, R. J., M.P., Belfast, ...	7 7 0	
Tennent, J. Thompson, Belfast, ...	9 5 0	
Tenison, E. K., M.P., Kilronan-Castle, ...	1 1 0	
Tenison, Lady Louisa, Kilronan-Castle, ...	1 1 0	
Thompson, John, Lowwood, Belfast, ...	2 2 0	
Thompson, R. & Co., Wolf-hill, ...	98 15 0	
Tirkeeran Farming Society, Co. Derry, ...	15 0 0	
Tottenham, Rev. R. L., Carrickmacross, ...	2 2 0	... 1 1 0
Townsend, S. R., Skibbereen, ...	1 0 0	
Trail, W., Ballylough, Bushmills, ...	5 4 0	
Trinity College, Dublin, ...	10 0 0	
Trower, E. Spencer, Herts, ...	1 1 0	... 1 1 0
Tullamore Branch, Co. Westmeath, ...	10 0 0	
Verner, Sir W., Bart., M.P., Churchhill, Moy,	50 0 0	... 5 0 0
Vesey, S., Derrabard, Fintona, ...	2 2 0	
Waithman & Co., Yealand, Lancashire, ...	5 0 0	
Walker, Mark, Leeds, ...	4 4 0	
Walker, R. & S., Tullygirvan, ...	13 11 0	... 1 1 0
Walker, W., Carrickfergus, ...	15 0 0	
Walkington, Thomas, Ballinderry, ...		... 1 1 0
Waller, Dr., Pallaskenry, Limerick, ...	2 0 0	
Wandesford, J. B., Castlecomer, ...	1 0 0	
Waring, Major, Waringstown, ...	1 1 0	... 1 1 0
Waring, Richard, Newry, ...	1 1 0	
Warne, H. & Son, Scole, Norfolk, ...		... 1 1 0
Warren, J. C. B., Horkesley-Hall, Essex, ...	2 0 0	
Waterford Flax Society, ...	10 0 0	
Waterford, Marquis of, ...	60 0 0	... 5 0 0
Watkins, J. G., Woodfield, Stourport, ...	2 2 0	... 1 1 0
Watson, James, Brookhill, ...	16 16 0	
Watson, R., & Sons, Lurgan, ...	5 5 0	... 1 1 0
Watson, William, New York, ...	2 0 0	
Watts, Samuel, ...	1 0 0	
Waugh, Miss, ...	1 1 0	
Waugh, Henry, Banbridge, ...	1 1 0	
Wexford Union Agricultural Society, ...	10 0 0	
White, W., Newton-Lodge, Sligo, ...	1 1 0	
Wiggins, Henry, Muff, Co. Derry, ...	6 0 0	
Wilkinson & Co., Leeds, ...	42 2 0	

	1841 to 1851.	1852.
Wilks, J., London,	2 0 0	
Willis, H. H., & Co., London,	1 1 0	
Wilson, J. & R. Derry,	1 1 0	1 1 0
Wilson, J., & Sons, Whitehaven,	1 1 0	
Wilson, D. J., Belvoir, Co. Clare,	1 1 0	
Wittowsky, Querfeldt, and Co., Riga,	5 0 0	
Wolsey, John, Portadown,	1 0 0	
Woods, Charles, Moy,	1 1 0	
Wynne, John, Hazlewood, Sligo,	2 0 0	
Young, J., & Co., Ballymena,	4 4 0	1 1 0

W. & G. Agnew, Printers, Arthur-square, Belfast.

67. 4.13

THE THIRTEENTH

ANNUAL REPORT AND TRANSACTIONS

OF THE

ROYAL SOCIETY

FOR

THE PROMOTION AND IMPROVEMENT

OF THE

GROWTH OF FLAX IN IRELAND;

WITH AN APPENDIX,

TREASURER'S STATEMENT OF ACCOUNTS,

AND

LIST OF SUBSCRIPTIONS AND DONATIONS,

FOR THE YEAR ENDING 31ST OCTOBER, 1853.

BELFAST:
PRINTED AT "THE MERCURY" OFFICE,
WINECELLAR-ENTRY.
1854.

8

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Office,—*Commercial Buildings, Belfast.*

RULES OF THE SOCIETY.

I.—That all persons paying a subscription of *one guinea*, annually, be constituted ordinary members.

II.—That the Society, besides its ordinary members, do consist of a President, Vice-Presidents, a General Committee of Management, a Treasurer, and a Secretary.

III.—That the Treasurer and Committee of Management be annually elected, by general meeting of the Society, from among its members.

IV.—That the Society do meet in the month of November, of each year, to elect officers, hear reports, make or alter rules, and transact such other business as may come before it.

V.—That the General Committee do meet on the last Wednesday in each month, for the transaction of the ordinary business of the Society, three members required to constitute a quorum; the Secretary to call special meetings, at the request of three members of the Committee, who may judge it expedient to do so.

VI.—That, as the utility of this Society will be much promoted by a number of persons taking an interest in it, it will be accessible to all, on the payment of one guinea, annual subscription; but, as the funds so procured would be, most probably, inadequate to its management, donations shall be solicited from persons who can afford such sums as will enable the contemplated objects of the Society to be effectually carried out; and it is confidently expected, that, for an object of such national importance, such contributions will be given as will put its success beyond a doubt, as far as the means of working it are concerned; and that the zeal and discretion of its managers will secure that benefit for the undertaking which its importance demands.

VII.—That every one who becomes a member shall continue to be considered as such, and his subscription justly due to the funds of the Society, until he gives notice, in writing, to the Secretary, of his intention to withdraw.

VIII.—That no member, in arrears two years or more, shall be permitted to take part in any debate of the Society, or give a vote upon any question, until such arrears be paid up.

IX.—The Treasurer shall receive all moneys belonging to the Society, and lodge same in the Bank which may be appointed to keep the accounts, when it may accumulate to the sum of £50 in his hands. He shall also draw cheques, and pay such sums as may be voted by the General Committee, at its meetings, but not without its authority; and said cheques shall be signed by the Chairman of the meeting, the Treasurer adding also his own signature. He shall also furnish a yearly statement of accounts, and report monthly receipts and expenditure, at the General Committee meetings, shewing a list of members whose subscriptions remain unpaid, at least once a-year.

X.—The secretary shall conduct the correspondence of the Society, keep the books of it and of the Committee, take charge of all matters connected with their proceedings, give notice of meetings to those entitled to them, and attend to any duties the Committee may direct.

XI.—All new rules, or alterations of the present regulations, to be made at the annual meeting of the Society; notice of such rule or alteration to be proposed having been given to the Committee, at least a fortnight previous to the general meeting.

XII.—That this Society shall encourage Branches, in different districts, for the purpose of forwarding its objects,—to correspond, and otherwise co-operate with the General Committee; the President of each of the Local Branches to be an *ex-officio* member of the General Committee, and to be entitled to the regular notices of meetings,—each Branch to consist of subscribers to the Society only.

XIII.—That, in order to afford every facility to Local Farming Societies and Branches, in the South and West of Ireland, for obtaining the services of the Flax Society's Agriculturists, the following be the regulations in future:—

First.—Every Branch or Local Farming Society, as aforesaid, which shall incorporate itself with the Flax Society, by contributing to it not less than *Ten Pounds*, annually, shall be entitled, while it so contributes, to the service of a Flax Agriculturist, for two weeks in the sowing, and three in the pulling seasons; the salary of the Agriculturist, and his travelling expenses to the district, to be defrayed by the Flax Society; but his expenses, while occupied within the bounds of the district, to be defrayed by the Local Society or the individuals employing him.

Second.—The Flax Society will send to the Local Society, so qualifying, one of the Agriculturists, during the Winter, if required, to select and prepare land for the flax crop.

Third.—A sufficient supply of the Society's publications will be furnished free of charge.

Fourth.—An additional week of the Agriculturist's services will be given, for every additional *two pounds* subscribed by the Local Society.

XIV.—That, in case of any individual landed proprietor being desirous of introducing flax culture in a district where there is no Local Society, or where it has not qualified, a subscription of not less than *one guinea* to this Society will entitle each individual to a certain time of the Agriculturists' services, to be regulated by the Committee of the Flax Society; and that, in all such cases, the expenses of the aforesaid Agriculturist, to and from the district, and while engaged on the estate, shall be defrayed by the landed proprietor so requiring him.

ROYAL SOCIETY

FOR

THE PROMOTION AND IMPROVEMENT

OF THE

GROWTH OF FLAX IN IRELAND.

(FROM "THE BELFAST MERCURY," OF 28TH NOVEMBER, 1853.)

ON Friday, the thirteenth annual meeting of this Society was held in the Council-room belonging to the Society, in the Commercial Buildings, Belfast, at twelve o'clock. The following noblemen and gentlemen were present on the occasion:—The Earl of Erne, Lord Lurgan, the Lord Bishop of Down and Connor and Dromore, Wm. Kirk, M.P., Newry; Jonathan J. Richardson, M.P., Lisburn; M. J. Anketell, D.L., J.P.; Fitzherbert Filgate, J.P.; R. Davison, M.P.; George Greer, J.P.; John S. Crawford, J.P.; C. G. M. Skinner, J.P.; Cecil Fane, C. J. Pownall, London; Dr. Hamel, of the Imperial Academy of Sciences at St. Petersburg; Sir Robert Bateson, Bart.; the Very Rev. the Dean of Ross, John Thomson, J.P., Low-wood; Robert Kennedy, J.P., Cultra; John T. Reilly, D.L., Scarva; Thomas Greg, J.P., Ballymenoch; David Lindsay, J.P., Ashfield; Dr. M'Kibben, Richard Niven, Chromehill; Edward Walkington, Samuel Walker, Tullygirvan; John Herdman, James Campbell, Robert Leadbetter, John Charters, John Borthwick, Killroot; John Owden, John Lamb, James Herdman, Robert MacAdam, Thomas Walkington, Ballinderry; Charles Duffin, William Charley, Seymour-hill; A. Bernard, J. Russell, John Preston, Gustavus Heyn, John Hind, jun.; W. G. Andrews, Comber; Michael Andrews, Ardoyne; R. Roddy, Victor C. Kennedy, James Hart, Adam Duffin, Esqrs., &c., &c.

In the room were a number of specimens of flax straw, fibre, and seed, chiefly the growth of districts in the South and West. Among the samples of fibre were some from county Wexford, grown by Lord Templemore, by M. W. Knox, Esq., of Arthurstown, and by John Rowe, Esq., of Daffry Lodge, Ferns; from County Cork, grown by the Earl of Bandon; by Mr. Cantillon, Little Island; and by N. M. Cummins, Esq., Annemount. One of the latter was of remarkably fine quality, rarely equalled in Ireland; we understand that £105 per ton had been offered for it. From County Clare, there were specimens from Mr. Watson, of Scariff; and from County Limerick, from Mr. Apjohn, Abington, and Rev. Grantley Shelton, Ballingarrey. From County Mayo, there were several lots, steeped at Messrs. Rollo and Holliday's rettery (Schenck's system), at Ballina, and wet-rolled. From Tipperary, some small specimens, steeped by Messrs. Hughes, of Clonmel, showing the effect of wet-rolling. From County Galway several strong but coarse samples were exhibited. A very fine specimen was shown by Mr. Wilson, of the Redford rettery, Fifeshire, Scotland, steeped on Schenck's system, and wet-rolled. Messrs. J. Leadbetter and Co. exhibited various qualities of fibre, prepared by Watts' patent system. The straw was from Counties Cork, Limerick, Galway, Tipperary, and Clare: and the seed from Louth, Wexford, Cork, Clare, Limerick, Galway, and Mayo. Some specimens of scutching-tow were also exhibited as cleaned by the machine invented by Messrs. Calvert and Garnett, Cleckheaton, Yorkshire, and made by Messrs. MacAdam, Brothers, and Co., Soho Foundry, Belfast. These samples attracted much attention, as they were valued at £8 to £10 per ton, and had been cleaned out of the refuse tow of the scutch-mills, which has hitherto been generally burnt. It is believed that this machine will be employed by all scutch-mill proprietors, and a very great saving be, by this means, effected, in fibre that formerly went to waste.

At half-past twelve o'clock, on the motion of the Very Rev. the Dean of Ross, the Chair was taken by the Earl of Erne.

The Noble CHAIRMAN then addressed the meeting, It gave him, he said, the greatest possible pleasure to have it in his power to attend that meeting, and to be honoured with presiding over it. His only regret was that the distance at which he resided from Belfast prevented him from attending more frequently at the meetings of the Committee of the Society; but there was not a committee in Ireland that possessed more practical, intelligent, and talented men than the Committee of the Flax Society. On that ground he felt quite assured that there was no society in Ireland worked better than the Flax Society; and his presence might be spared. The present meeting was their 13th annual assemblage since they were, what he might call, a Foundling Society; and he was glad to learn from its excellent dry-nurse, his friend Mr. MacAdam, that the progress of the society had exceeded their most sanguine expectations; that as it progressed in years, it was improved in health and strength; and in his heart and soul he believed there was no Society in Ireland of equal usefulness or advantage to the population. Ireland, from time immemorial, was a flax-growing country; but their ancestors did not pay any attention to system in the culture of flax or of its manufacture, and therefore it was that, when Irish flax came into the markets, and was compared with the produce of other countries, it was found unequal; and ultimately it was considered advisable to have a Flax Society, for the purpose of imparting instruction as to the best system of cultivation and preparation. The Noble Earl then proceeded to consider the objections made to the cultivation of flax, on the part of some uninformed agriculturists. He said that it was only necessary to have the lands well pulverised, to have great care taken of the fields, and not to grow the same crop often on the same ground. He thought five or six years might be a fair limit to put down the same crop in a field. Then, with regard to the climate, Ireland had a dropping climate—it dropped a little too frequently in Belfast—(laughter)—and that was the sort of climate that suited the cultivation of flax. He held in his hand a return which he had procured from a friend of his, and he found, by referring to it, that on the produce of an acre of ground under flax, a day's labour of sixty-four females and fifty-three males, or one hundred and seventeen persons in all, is employed on it from the time it is pulled to the time that it goes to the mill. From a return made to the Government, he found that 175,000 acres were under flax this year; and that, on the estimate he had just made, it would appear that this breadth of flax would give a year's employment to 56,000 persons, the wages of whom would be about a million of pounds sterling. (Hear.) There was no one crop which could be said to afford an amount of employment at all like that; and it should be borne in mind that this calculation was made on the supposition of the scutch mill being used; but, if they were to use the hand-scutching system, they would have a great many more persons employed. Then the crop was a paying one, and he could say that on his own property, in the County Donegal, the people always preferred the flax crop. They sometimes got £15 for the flax on foot, and it was considered that taking the seed at 20 bushels, and the price at 5s or 6s, the owners have a return of upwards of £20 for an acre of flax, without any trouble further than sowing it. In England, where they grow flax principally for the seed, they had a large quantity of seed to the acre; but taking the return at twenty bushels, the result was such. He said if the water which steeped the flax was put on the land, and if the seed were given to the cattle, the manure produced would so enrich the ground that it would be greatly improved instead of exhausted. In fact, flax was a nurse to the soil—almost as good a nurse as his friend, Mr. MacAdam, had proved himself towards that society. By the act of pulling it, the ground was loosened and the after crop of grass benefited. If it were true, then, that they had a climate that gave every advantage to the culture of the crop; if they found it profitable, if they knew no other crop that afforded so much employment, it was quite clear that the people of Ireland ought to apply themselves to its cultivation, and there was no way in which that could be better done than by co-operating with that society. In England, in Scotland, wherever they went to, if they asked for information relating to the culture of flax, they were referred to Belfast and to the Royal Society; and he considered that if their friend, the present Chancellor of the Exchequer, when drawing up the Income Tax Act, had only thought of putting sixpence on those landlords who were not connected with their Society, it would have had a salutary effect. Confined in their operations though they had been, they had yet done a great deal. Government, it was true, gave them £1,000 a-year, but that money was scattered over the provinces and distributed to the best use in the South and West of Ireland, while only the general funds of the society were applied to Ulster. To prove that the society had done much, he would read them some statistics with which he had been supplied; they began with the year 1847, the only time at which they commenced to get correct information. He found from these returns that in 1847 there were grown 57,000 acres of flax; in 1848, 53,000 acres; in 1849, 60,000 acres; in 1850, 91,000 acres; in 1851, 138,000 acres; in 1852, 137,000 acres; and in 1853, 175,000 acres. That return shewed that they had been going step by step onward in improvement during the last six years in the cultivation of flax. As regarded the Southern provinces, their former average had been only 2,000 acres, and in the year 1847, the first year in which they could procure regular returns, they found that in the South and West there were only 5,968 acres cultivated, while in 1853 there were 14,300, which was much more than double. Another consideration arose, and that was the establishment of markets. In Galway, Athlone, Cork, and Limerick, this had been done. As for his own knowledge, he was aware that in his own County of Fermanagh—he resided near a small town, and the county did not grow much flax—but in that little town, and in others also, there had been markets for flax established, and they did well, many thousands of pounds worth, each market day, being sold in them. In Castleblayney there had been a market founded, and there had been two thousand pounds worth purchased there at Belfast. He understood, too, that there were 13 steeping establishments in Ireland. In 1825, he learned that there were 8,000 tons of Irish flax exported —let them remember "exported"—the value of this export being £400,000. The society's operations had, he found, been, this year, carried on in 28 counties in Ireland, and last year he observed that throughout the country they had 966 scutch mills, of which 40 were in Leinster, Munster, and Connaught, where, before the Flax Society introduced them, they were none at all. (Hear, hear.) The saving of seed had increased, and it was a most important thing that this question should be publicly mentioned, and that the society should call the attention of landed proprietors to it. In the County Donegal he wished the farmers to attend to this, and after bringing the matter under their notice, they promised to save one-half of their seed by way of experiment. He was pleased with that, because he knew that if ever they began with the one-half they would commence to save the whole. That, he believed, was one reason why they should proceed step by step, for the experiment once successful they would come in a short time to have the seed saved everywhere. (Hear, hear.) He had now only one request to make, and that was that when they went home, they would propose "Success to the Flax Society." (Hear, hear, and applause).

Mr. **MacAdam**, Secretary, then read the following as the

ANNUAL REPORT.

"At the close of another season's labours, your committee have again called the members of the society together, in order to lay before them this, their thirteenth annual report:—

"GOVERNMENT AID.

"It is now six years since, on the recommendation of the Earl of Clarendon, the Government first availed themselves of the instrumentality of this society to aid the introduction of flax cultivation in the South and West of Ireland, and through this means to bring within the reach of the farmer an additional source of profit, while affording to the labourer an extended means of employment. The fund applicable to these purposes is not, as you are aware, derived from the resources of the State, but consists of a large sum of money, placed by Act of Parliament under Government control, and whose expenditure is restricted to certain counties in the provinces of Munster and Connaught.

"Last year, on the advent of the Earl of Derby's Cabinet to power, your committee obtained, through representations made, by deputation, to the Lord Lieutenant and the Premier, a prompt and cordial recognition of the value of this society's exertions, and an immediate renewal of the annual grant of £1,000 for the purposes mentioned. In the present year, when the Earl of Aberdeen's Ministry was formed, your committee deemed it advisable to follow the same course. The reception of their deputation by the Viceroy and the Prime Minister was equally gratifying, and the grant was again renewed, in consequence of which the society's operations have been continued on the same extended scale as formerly.

"OPERATIONS OF THE YEAR.

"The labours of the instructors were directed to the same objects as in former years, including all the various processes in the culture and preparation of flax, from the choice of the soil to the final preparation of the fibre for market. Eighteen of the society's staff were thus occupied, in districts of the Counties of Donegal, Londonderry, Down, Tyrone, Fermanagh, Monaghan, Cavan, Longford, Westmeath, Meath, Louth, Queen's County, Wicklow, Kilkenny, Wexford, Cork, Kerry, Clare, Limerick, Tipperary, Waterford, Galway, Mayo, Sligo, Leitrim, and Roscommon. Many satisfactory testimonies have been received of the ability and zeal with which the instructors have discharged their duties.

"CROP OF 1853.

"The season, throughout, has been an unfavourable one for the flax crop. The heavy rains of Winter prevented a proper preparation of the soil, the sowing was late, and the dry weather in May and June checked the growth of the plant, while, although it was forced forward by subsequent rains, the fibre did not sufficiently mature before the pulling season. The yield, therefore, has been under an average, and the quality of the fibre is very variable, and generally inferior to that of last year. On the other hand, the prices obtained in the market, being fully 25 to 30 per cent. above those of last year, have proved remunerative to the farmers, while those who, by exercising care in the details of culture, have grown superior crops, have received very large returns.

"EXTENT OF IRISH FLAX CULTURE IN 1853.

"It is again your committee's pleasing duty to refer to the continued and rapid increase of Irish flax culture. Taking a retrospective view, and referring to the Government statistics, they find that, in 1848, there were 53,863 acres; in 1849, 60,314 acres; in 1850, 91,040 acres, in 1851, 138,619 acres; and in 1852, 137,009 acres. From a return just furnished by the Census Commissioners to the society, by order of Government, it appears that in the present year there were 175,495 acres under flax in Ireland, being an increase of nearly 29 per cent. over last year's crop, and of 220 per cent. over that of 1848. The increase in the Provinces of Leinster, Munster, and Connaught, is 22 per cent. over last year, and 436 per cent. over 1848, the growth having steadily advanced from 2,663 acres, in 1848, to 14,279 in the present year.

"IMPORTS AND EXPORTS OF FLAX.

"The continued and rapid increase of flax culture in Ireland has led to a sustained augmentation of the exports of flax and tow. Of the crop of 1852 there were exported, from Belfast alone, 5,291 tons of the former, and 2,207 tons of the latter; and, including Newry and Londonderry, the entire Irish export reached 6,696 tons of flax, and 2,308 tons of tow, value in all £392,500. This quantity included 413 tons of flax shipped to France, a feature which your committee continue to regard with great satisfaction. It is most gratifying to observe that, since 1850, the export from Ireland of the raw material has increased from 3,166 tons to 9,004 tons, notwithstanding the very large additions, during that period, to the Irish flax-spinning trade, and the consequent increase of home consumption. There can be little doubt that, as the growth of this crop continues to extend in Ireland, the export of its fibre will also increase, not only for the supply of English and Scotch spinners, but also for those of the Continent. In addition to the export to France, which, within the last three years, is quite a novel feature, there has been, very lately, a small quantity shipped to Belgium; and your committee understand that German spinners have also procured samples. The opinion, therefore, expressed by your committee, ten years ago, when the growth of flax in this country was as yet in its infancy, is likely to be fully borne out—that this product of Ireland may be expected largely to replace foreign flax of certain qualities, not only in the British Islands, but in the linen manufacturing States of the Continent. Thus, Irish flax-growers have, as an encouragement, not only the great margin offered by the imports into the United Kingdom of foreign flax, which last year were equal to the growth of 280,000 acres, but also the prospect of an extensive demand from abroad whenever the quantity grown in Ireland may afford supplies to meet such demand.

"With reference to the extent of imports from foreign countries, your committee may state that, notwithstanding the very great increase in Irish flax culture, the progress of the British and Irish linen manufacture has been so rapid that, in 1852, 70,113 tons of flax and tow were imported into the United Kingdom, and that, during the nine months ending 5th October, of the present year, the imports reached 62,264 tons, being an excess of 13,677 tons over the same period of 1852.

"In considering this question, it will be at once apparent to you that, if any additional reasons were required to prove the great national and imperial advantages of encouraging the extension of flax-growing in Ireland, they are amply afforded by the existing state of our political relations with Russia, from which country more than two-thirds of the supply is derived. Were this threatening aspect entirely dissipated, there would yet remain the fact that our imports from that country do not even offer the advantage of a means of exchange for the manufactures of the United Kingdom, but that, owing to the almost prohibitory duties levied by Russia on those manufactures, the payment of the imports is a continual drain on the resources of these islands.

"PATENTED SYSTEMS OF STEEPING.

"During the past twelve months, your committee have had frequently brought before them questions relating to the several modes of steeping and preparing flax fibre, invented and carried out, of late years, with a view to separating the growth of the plant from the preparation of its fibre, and thus of establishing the valuable principle of division of labour. As you are already fully aware, your committee have felt it to be a duty incumbent upon them to investigate most closely, as well as to consider with strict impartiality, every project of this nature which has appeared from time to time. The system of steeping in hot water, invented by the late Mr. Schenck, has repeatedly been reported upon to you. The method adopted by Mr. Watt, of steaming the flax-straw, was, at the last annual meeting of the society, brought before you. Since then various plans for effecting the same object, chiefly as modifications of the foregoing, have been promulgated by Mr. Pownall, of London, M. Terwangne, of Lille, Mr. Buchanan, of Glasgow, and others, which your committee have examined in so far as the data placed before them have enabled them. As yet, however, the methods of Schenck and Watt are the only ones undertaken on an extensive practical scale, while the others have been limited to experiments highly interesting, but, for so far, inconclusive. A source of some embarrassment has arisen in the claim made, by several parties, to priority of patent right in a process which appears to be a great improvement in the treatment of flax, and which consists in the pressing of straw, through metal rollers, after steeping, thereby getting rid of the remaining impurities, and separating the fibres into their ultimate filaments. While expressing their favourable opinion on the specimens produced, in illustration of the effects of this process, your committee have declined in any way to interfere between the several parties, as they consider that it is for the latter to establish their relative claims. They feel, at the same time, called upon to express their sanguine expectation that the general adoption of this process, in flax-retteries, will remove any faults hitherto found, by spinners and manufacturers, in the quality of the fibre formerly produced by the patented methods, and they continue to believe that the option afforded to the grower, by the proprietors of retteries, of selling his crop in the straw, is of great value, especially in districts where the cultivation of the crop has been but lately begun, and where the growers are ignorant of the processes subsequent to the pulling of the plant. Before leaving this section of their report, your committee are pleased to be able to affirm that the prices paid for the straw by flax-retters, this year, throughout Ireland, have been in general highly satisfactory to the growers.

"SCUTCHING MACHINES.

"In last annual report, your committee adverted at length to the great want of improvement in this department of the management of flax, and stated that they had under consideration the relative merits of several inventions purporting to do away with existing defects. Since then their attention has been much occupied with different projects, the most prominent of which are those of Mr. M'Bride, of Armagh, Messrs. Lawson & Sons, of Leeds, and Mr. Wilson, of Bedford, Fifeshire. They have had several opportunities of investigating the merits of the two first-named machines, but, as yet, they are not in a position to report decisively on this important question. From what they have witnessed, however, they believe that they shall have, ere long, to report upon a progress, more or less complete, towards the establishment of a process which shall be, to a great extent, self-acting, and that considerable improvement will be thus introduced into the scutching process, tending towards economy of labour and increase of yield. They believe it to be almost unnecessary to assure you that they are prepared to give every attention to these various projects, and to exercise the same impartial and careful scrutiny which they have hitherto given to every plan brought under their notice

"In consequence of the powers given to the Board of Public Works, by the Act of Parliament passed in the session of 1852, several applications for loans, for the erection of scutch-mills, have been received by that board, and your secretary has been in correspondence with the chairman on the subject, and has furnished plans for the guidance of the board.

"At the suggestion of your committee, an interesting and important return of the existing position of Irish scutch-mills has been made, through the Census Commissioners. There were in Ireland last year, 966 mills, with 5,053 stocks. Including the women employed in stricking, fully 15,000 persons derived a means of livelihood from this trade, during a portion of the year, and their aggregate earnings may be taken at about £160,000. It is especially important to note that, in the provinces of the South, East, and West, 40 mills were in operation, with 341 scutching stocks, all of which have been put up since the society, in 1847, first extended its labours to those districts. It further appears from the returns that no less than 54 mills are now worked by steam-power, which is a great improvement in the certainty and regularity of working, and is of much advantage to growers, scutchers, and consumers of flax. Many additional scutch-mills have been erected during the present year, and your committee believe that, when the next return is prepared, a large increase in the numbers given above will be noted.

"FLAX MARKETS.

"In connexion with the extension of flax-growing in the Southern and Western districts of Ireland, your committee have had their attention directed to the most judicious means of bringing together the producer and the consumer—of enabling the former to dispose of his fibre to the best advantage, and of pointing out to the latter the localities in which he might best obtain a supply of his material. The distance of Belfast from the chief centres of flax-growing in the South and West having been stated, by many influential persons, as an obstacle to the sale of the produce, your committee urged upon the Belfast flax-spinners the propriety of naming days on which their buyers would attend in some of the leading towns of the districts refered to. This request was promptly met by the spinners, and in the month of February last, flax markets were consequently held in the cities of Cork, Limerick, Galway, Athlone, and New Ross, when the flax-growers of the Counties of Cork, Limerick, Kerry, Clare, Tipperary, Galway, Roscommon, Westmeath, Kilkenny, Waterford, and Wexford, had an opportunity of bringing their flax for sale. Upwards of fifty tons were disposed of, and the markets passed off to the general satisfaction, the buyers being subsequently publicly entertained at Cork, where the Lord Lieutenant of the county presided, and at Galway where the chair was filled by the Mayor of that city. These markets being purely experimentary, and the bulk of the growers having disposed of their flax, in the straw, to the retteries, the quantity brought forward was necessarily small; but your committee believe that the best effects were produced by the presence of Belfast buyers, through the impression thereby created among growers that their flax would henceforth meet with a ready sale without the necessity and inconvenience of forwarding it to Belfast. The extension of the growth this year in County Cork has led to a market being already held at a village on the Earl of Bandon's property, where several tons of fibre were disposed of at remunerative prices. Arrangements are again in progress to secure the continuance of the markets opened last year, and your committee have little doubt that both the growers and the spinners will be equally satisfied with the result.

"FLAXSEED.

"Your committee have not, in the slightest degree, relaxed their endeavours to induce the farmers of Ireland to economise the seed of their flax crop, the value of which they have so repeatedly pointed out, as well as the national disgrace of destroying it by steeping with the stems. It is satisfactory to be able to report that, in Belfast alone, about 20,000 bushels of seed were sold this year to the local oil-mills, and for export to England and Scotland, and that nearly £5,000 was paid for this quantity. In the interior, also, a considerable portion was saved for sowing and feeding. Some landed proprietors exerted themselves, in a most praiseworthy manner, to encourage the saving of seed, by offering to purchase it from their tenants, and by furnishing rippling combs, free of charge.

"Three oil-mills have also been established this year, in country districts, two of them being in the South, on the Continental principle, and others are about to be erected. Through these there will be a considerable stimulus given to the saving of the seed, from the local demand which they will create, and they will also afford facilities for carrying out the improved system of fattening cattle. Your committee have also pointed out the advantage, to all parties, which would result from men of business in country towns purchasing the seed from the neighbouring growers, and seeking a market in Belfast, or in England, shewing, at the same time, how extensive is the import of foreign seed for conversion into oil and oil-cake.

"It is further to be observed, that the value of home-saved seed, for sowing, has received additional confirmation from the experience of the year.

"RAILWAY EXTENSION.

"As closely allied to the foregoing topics, the measures now in progress for the extension of the railway system throughout the country are of much importance. There is every reason to hope that, during the next Session of Parliament, bills will be obtained for connecting the linen manufacturing districts of the North of Ireland with the counties of the centre and West, and that various other extensions of the railway system will be authorised. An easy means of access to Belfast will thus be afforded to the growers of a large area of Ireland; those districts where the culture is but just commencing will have an additional stimulus afforded them; other localities, where the crop is already extensively grown, will be much accommodated by the avoidance of an extensive carriage by carts, and the injury to their flax, caused by the weather, on the way; and the saving of seed will be promoted by the facilities afforded for bringing it to Belfast, where it will meet with a ready sale.

"EXPERIMENTS ON MANURES.

"Through the superintendent of the agricultural schools of the National Board of Education, your committee have had experiments made, in order to ascertain the comparative effects of different manures on the flax crop, which experiments have been carried out, this season, at the Glasnevin, Athy, and Cork model farms of the board. When the results have been fully examined, they will be published for the guidance of farmers, and the experiments will be repeated and extended should it appear necessary.

"INTERCOURSE WITH FOREIGN FLAX GROWERS.

"In previous reports, your committee have adverted to the frequent communications established by the society with the chief flax-growing countries of the world, and have, at the same time, expressed their views on the advantage of exchanging opinions and information with those countries, and to the gratifying fact that this society is now considered the centre of flax intelligence, not only for Ireland, but for all those states where flax forms a leading article of production. Allusion has also been formerly made to the importance at present attached, in all countries which cultivate flax, to improvements in the different processes of growth and preparation. In the extensive intercourse of this society with foreign flax-growers, many valuable suggestions have been received, and your committee are especially indebted to the Royal Prussian Society for Promoting the Growth of Flax and Hemp, for repeated interesting communications.

"It is a source of pride to your committee that the institution of this society, twelve years ago, and the highly successful results which have attended its labours, have been the means of directing the attention of almost every country of the globe, in which flax is cultivated to any extent, to the increase and improvement of this branch of agriculture; and that, since then, the Governments of those countries have manifested much interest in the subject, associations have been formed to aid in its development, the machines and inventions first brought out in Ireland have been largely adopted on the Continent, and in the British colonies; and a beneficial influence has thus been exerted on the progress of agriculture and manufactures in the great community of nations.

"In England and Scotland, also, the success of the society's operations has excited considerable interest; flax-growing is rapidly increasing; and a wholesome rivalry will consequently be created between the farmers of the sister island and those of Ireland.

"VARIETIES OF FLAX.

"There have been two varieties of the flax plant brought under your committee's notice this year. The first is a description, with white flowers, now cultivated to some extent in Belgium and France, which is said to be hardier than the ordinary kind with blue flowers, to succeed better on inferior soils, and to produce a larger quantity of seed. The second variety is reported to have been discovered, by Sir R. Schomburgk, growing on the banks of the River Orinoco, in South America, and is said to produce a finer fibre than the description ordinarily cultivated in Europe. Your committee have already instituted experiments, in order to ascertain the advantages, if any, afforded by these new varieties, and hope soon to be in a position to make public the results of their trials.

"OTHER TEXTILE FIBRES.

"Though not precisely within the limits of the society's objects, your committee have not declined to receive communications relative to other fibres likely to prove of value in textile manufactures. Among these may especially be noted the fibre of New Zealand flax (phormium tenax), of hemp (cannabis sativa), of China grass (urtica nivea), and of Bokhara clover (melilotus arborea). They have endeavoured to ascertain, first, whether such fibres as are new to commerce are suitable for manufacture in Ireland; and secondly, whether the plants can be cultivated to advantage in this country. As yet they are unable to express any opinion upon these points, but they will continue to investigate them, and will, at a future time, publish the results when ascertained.

"CONCLUSION.

"Your committee have endeavoured, in this report, to present to you a faithful transcript of their proceedings, since last annual meeting, in discussing the various topics which have claimed their attention, from time to time. They cannot but congratulate you on the remarkable evidence of progress afforded by the experience of this year towards the end contemplated by the founders of the society. Flax culture has largely increased in the province of Ulster, and is steadily progressing in many other districts of Ireland, notwithstanding the obstacles which have continually presented themselves. Improvements in the various processes are being daily carried out, and the grower and the manufacturer are both deriving benefit from these ameliorations. Such progress leads your committee to form sanguine opinions with respect to the future, and to believe that, if the system hitherto pursued be persevered in, this country cannot fail to gain, to a large extent, by the impulse which must consequently be imparted to its agriculture and manufactures. They will continue earnestly and steadily to pursue the end in view, and hope thus to merit a continuance of the confidence which has been so largely reposed in them by the Government, the society, and the public at large."

The **Secretary** then read the annual abstract of accounts. On the debit side was £277 16s 8d, balance remaining in hand on 31st October, 1852; £1,000 received from Government, and £274 1s 0d subscriptions paid in up to 31st October, 1853. On the credit side was an expenditure of £1,335 3s 3d, leaving £316 14s 5d in bank and in hands.

The **Secretary** stated that from absence in England and other causes, the President, Lord Downshire, A. Shafto Adair, Esq., F. W. Russell, Esq., M.P., &c., had written that they were unable to attend. He read the following letters from Sir J. M. Stronge, Bart., Sir R. Kane, and George Macartney, Esq., M.P.:—

"*Queen's College, Cork*, 18*th November*, 1853.

"My Dear Mr. MacAdam,—I regret that, being detained here by College affairs, I have no hope of being able to attend your anniversary meeting in Belfast. I had, indeed, promised myself the pleasure of being with you this year, but I must postpone that pleasure until next time.

"I shall feel obliged by your expressing to the society my regrets at not being able to attend, and my sincere congratulations on the steady success which has attended their patriotic and practical exertions.—Believe me to be truly yours,

"James MacAdam, Esq., jun., Secretary." "Robert Kane.

"*Lowther Lodge, 24th November.*

"Dear Sir,—Your note of the 19th instant, conveying the wish of the committee that I should attend the annual meeting on the 25th, only reached me at a late hour last night. I regret very much I had not a few days' previous notice, as I could then have arranged to put off attending a meeting, I must be present at to-morrow in Dublin, as, be assured no one is more alive to the great benefit arising from the unpaid exertions of noblemen and gentlemen, who have so constantly promoted and encouraged every improvement in the culture and management of our great and only staple manufacture and crop, that of flax.—I remain, dear Sir, yours truly,

"James MacAdam, Esq., jun. "George Macartney."

"*Tynan, November* 22, 1853.

"My Dear Sir,—Having an engagement at Derry, on the 25th, will prevent my attending the flax meeting, at Belfast, on that day, which I regret much.—Yours, my dear Sir, very truly,

"J. M. Stronge.

"J. MacAdam, Esq., jun."

Mr. Kirk, M.P., proposed the first resolution, which, with the others subsequently adopted, will be found at pages 28 and 29. In rising, he said, to move the adoption of the comprehensive, admirable, and gratifying report just read by the efficient and talented secretary, he felt he could add very little to its contents, except in the way of one or two practical observations, intended less for the meeting than for some parties out of doors, to whom the noble chairman, in his opening remarks, had administered a proper and caustic reproof. He now alluded to that portion of the community in the North of Ireland, and perhaps to a great number, in particular, of persons in the county of Armagh, where he resided, who were in the habit of growing flax in large quantities, and in everything except one grew it better than almost any other persons in the kingdom, and that one thing was their neglect in saving the seed. (Hear, hear.) He considered the saving of the seed a most important matter; and when recommending it to his neighbours, he usually was answered, "Oh, we are willing enough to save the seed; but when we do so, ths cost of saving it is greater than the profit we get by it;" so that, in fact, they would prefer steeping the flax without detaching the bolls at all. He would, however, say to them that they ought to keep a portion of the flaxseed sufficient to serve them for the coming year's crop; and, as the chairman had properly observed, it would considerably enhance their profits. He did not propose a mere theory that he did not prove the correctness of it by experiment; what he stated was his own mode of managing the flax crop, and he should say that every year since his attention had been directed to the matter by the Royal Flax Society, he had saved from 10 to 14 cwt. of flaxseed meal per acre upon what he grew. He found the meal an excellent thing for feeding cattle, pigs, and horses; cows fed upon it and throve amazingly. There was another matter which might be brought under the notice of gentlemen in the South and West of Ireland. When he met gentlemen from those provinces, the first thing they spoke to him about was the great want of employment for their people; and when he asked them why they did not grow flax, their answer invariably was, "We have no scutch-mills." His reply to them was, that they had no need for them; let them employ their people during the season in preparing the land for the cultivation of crops, and after the Autumnal labours were over, let them be employed in hand-scutching the flax, which would afford ample employment for those who could not be otherwise engaged. He believed that if the cultivation and preparation of flax were taken up in such a practical manner, it would give abundant employment in those portions of the country where it was so much needed; and it was owing to the want of a proper, patient, and unwearied spirit of exertion that the flax was not so cultivated. (Hear, hear.) It was a most gratifying thing to hear, that through this society, such a vast increase had taken place in the cultivation of flax in this country, and it was gratifying, besides, to feel that this society was the rallying point to which all other associations referred with pride and pleasure. The committee and the secretary deserved the greatest credit for bringing the society to the enviable position it now occupied. But, though capable of doing great good, he felt there was a great deal of point in his Lordship's reference to the funds of the society. It was honourable to Lord Clarendon that he had influenced this grant of £1,000 yearly to the maintenance of the Society, and he trusted that it would long be continued—that from whatever source it might be derived, the grant would not be taken away. (Hear, hear.) He would simply add his hope that flax culture would progress, and that the society wonld prosper in its endeavours to make that culture a portion of the rotation in every part of the country, and that by doing so, the people would have a fair remuneration for their labour. (Hear, hear.) Mr. Kirk concluded by moving the resolution.

Mr. M. J. **Anketell**, of Anketell Grove, seconded the motion, which was carried unanimously.

Mr. **Thomson**, of Lowwood, proposed the second resolution. He had heard a great deal stated about the advantages arising from the cultivation of the flax plant, and there was no doubt that nothing could be wiser or more judicious on the part of the Government than to assist in every way in its power in effecting such a desirable object. Their society had done much in extending the growth of the flax plant, and it was gratifying to know that the Government was still disposed to second their efforts; but, after all, in his opinion, the most effectual way to have their exertions crowned with success was to open proper railway communication with the districts in the South and West of Ireland. (Hear, hear.) He believed that all that had already been done in the way of furthering the growth of flax in those parts would be imperfect, if they did not give the farmers there an opportunity of bringing their flax to a good and ready market, where it would be bought—he meant to Belfast. (Hear, hear,) Here there was a market not to be exhausted. Day by day, they saw thousands of spindles rise in Belfast, at an immense cost; and they would require a vast quantity of flax to keep them in continued operation. It was therefore admitted by all that the increased cultivation of flax was essentially necessary in the interior districts of the country, and it was also admitted a central market for its sale, such as Belfast could be, was of the utmost importance. Time with merchants of Belfast was very valuable indeed, and, in order to make purchases of flax in other parts of the country, it was necessary for them to visit them, and to talk with the farmers about the flax, in regard to its quantity as well as its quality. and the manner of preparing it for market. Now, in the present state of things, they could not do that, without a great sacrifice of time, expense, and trouble. To go to and return from Galway, it would occupy not less time than a week; and, if the flax markets were held monthly, it would be easy to see much valuable time would be consumed in twelve months, by Belfast merchants, in visiting Galway. At present, he understood that to bring one ton of flax fifty miles, under existing circumstances, would cost not less than £2; whereas, if the conveyance was by railway, it could be carried for 12s or 15s.

(Hear, hear.) Then, let them look to the time saved by railway. From Hamburgh the merchants of Belfast could bring flax by steam at £1 per ton; whereas, to bring it fifty miles at home, would cost, as he had already said, £2. It was necessary that farmers should be able to get the highest prices for their flax; and there was no crop now so remunerative, and so well calculated to assist in rendering the country prosperous, as that of flax; and, in order to enable them to get that price, they must have the country opened by railways. (Hear, hear.) Perhaps he might be allowed to state that there was now a project of national importance in progress, which would, in a great degree, assist in carrying out the object he had in view. It was the extension of the Ulster Railway, to be joined by the Belfast and West of Ireland Junction, which would lead them right into the midland counties of Ireland, and bring them into connexion with Galway. Moreover, many gentlemen were of opinion that another railway would be opened from Mullingar to the South; but as this question was not immediately before them, he would not further advert to it. As to the extension railway from Armagh, he was happy to tell them that they had everything in a state of forwardness, and would be ready to get their Act at the next Session of Parliament. (Hear, hear.) The project he had alluded to was of national importance: and, if carried out, there would be no excuse for not cultivating the growth of flax to the greatest possible extent in the South and West of Ireland. Mr. Thomson concluded by moving the adoption of the resolution.

Mr. **Fitzherbert Filgate**, of Hillsborough, seconded the resolution, which passed.

Sir **Robert Bateson**, Bart., Belvoir Park, in proposing the next resolution, referred to the passage in the report having allusion to our relations with Russia as a reason for the more extensive cultivation of flax in this country, expressed his aversion to be sending money to the dominions of the Czar, and his preference for the Sultan.

Mr. **J. Sharman Crawford**, of Crawfordsburn, in seconding the adoption of the resolution, considered it was not necessary for him to add anything to what had fallen from the previous speaker, to recommend it to the meeting.

The resolution was then put from the Chair, and unanimously adopted.

Mr. **J. Joseph Richardson**, M.P., moved the fourth resolution. He said he agreed with Mr. Kirk, that it was not desirable to steep flax with the seed upon it; and, in the majority of cases, that the grower should save as much of the seed as should serve him for the next season's sowing; but he did not agree with him in his recommending the saving of all the seed.

Mr. **John Temple Reilly**, of Scarva House, in seconding the resolution, asserted that the saving of the seed did not deteriorate the fibre, and not only that, but the seed itself was very valuable in the feeding of cattle. He had found that home-grown seed would frequently grow as good a crop as foreign seed.

The SECRETARY entered into an explanation of the causes which created the difference between the views expressed by Mr. Richardson and those entertained by many others, as to the quality of the home-saved seed. Mr. Richardson alluded to saving the seed in straw, which deteriorated the quality of the fibre; but if it were taken off by rippling, before steeping, the fibre produced by it was excellent, and the seed gave an increased value of from £2 to £4 per acre. He knew that flax produced from this description of seed was equal to that from foreign seed. (Hear, hear.)

The resolution being put and passed,

Mr. DAVISON, M.P., proposed the next motion. He would do it (he said) in a very few words. The only observation he had ever made on the society were made to Lord Aberdeen, in advocating a continuance of the grant. (Hear, hear.) He had happened, however, to be at the Board of Trade, when two gentlemen came with new plans connected with the cultivation and dressing of flax. The President of the Board was sent for, and his first question was, had their plans been submitted to the Royal Flax Society of Belfast? They might be assured that such a recognition of their society was most gratifying to him. (Hear, hear.) Highly approving of it, he begged to move the resolution entrusted to him.

Mr. GREG, of Ballymenoch, seconded the motion.

The CHAIRMAN said that there were two gentlemen present who were connected with two different processes for the preparation of flax—Mr. Pownall's Flax Patent, and Watt's system. He then introduced Mr. Cecil Fane, of London, to the meeting.

Mr. FANE then addressed the meeting. He explained Mr. Pownall's process, which simply was, that instead of drying flax after fermentation, as was usually done, he proposed subjecting it, whilst wet, to repeated mechanical pressure, and the action of a stream of water for the purpose of removing the resinous and gummy matter. When Mr. Pownall discovered this process, he applied to the proper quarter in Ireland and had a patent taken out for it. He (Mr. Fane) had formed an acquaintance with Mr. Pownall, and having satisfied himself of the importance of the invention by minute inquiry, he had given it his support. He had come to the conclusion that it was a cheap process, which could be generally adopted, and would carry out the principle in view. After some further comments on Mr. Pownall's process, Mr. Fane said he had received a letter from a gentleman who had tried the process, and who stated that the saving effected by it amounted to about £15 per ton. He did not come there for the purpose of advocating either Pownall's or Watt's systems. He wished them to act with impartiality on both sides; all he wished was, that Mr. Pownall's system should have a fair trial, and the trade should have an opportunity of judging of its merits. If Mr. Pownall's should fail, he (Mr. Fane) would be loser of £2,000 or £3,000; but he did not care a straw for that; it would not occasion him one sleepless night. All he wished was that it should be known over the country, and have a fair trial; and he was happy to see Mr. Leadbetter present at the meeting, hoping that the patent with which he was connected should also receive the same fair consideration. (Hear.) All that was required by Mr. Pownall's process was a simple machine for rolling and washing the flax.

Mr. LEADBETTER, in reply to a call from the Chairman, said he had great pleasure in seeing Mr. Fane, a stranger, among them, as his philanthropic efforts for the improvement of the manufacture of flax were very creditable to him. He believed that it was of importance to the interest of the flax trade that there was more than one new process before the public, as one inventor stimulated another. What had been done in working out Watt's system he thought might be best shewn by facts and figures, and he would therefore read the following report:—

"TO THE ROYAL FLAX IMPROVEMENT SOCIETY OF IRELAND.

"As requested, we have much pleasure in laying before your Society a short statement of the progress of Watt's process for the preparation of flax, since the investigation of its merits by your Committee last year. Since that period, experience has enabled us to economise to a very important extent several parts of the working expenses. The flax produced we have readily disposed of at fair prices; and though some spinners have observed peculiarities in its hackling and spinning properties, as well as in the after process of the boiling of yarns, incident to the mode of its preparation, yet these we conceive, from recent experiments, will be easily avoided, and we will shortly be able to produce flax which will be completely free from such peculiarities for those to whom this is an object. Ten works will soon be in operation in the United Kingdom, while others have been resolved on for next season. The most of these works are each capable of consuming the produce of about five or six hundred acres of flax per annum. We beg to call your attention to the accompanying letter from Sir John MacNeil, who is working the system, and has had considerable experience in preparing flax by different methods. He writes as follows:—

"'*Mount Pleasant, September*, 24, 1853.

"'DEAR SIR,—In answer to your query as to how I have found your system of preparing flax to succeed in my establishment, I have much pleasure in stating that I consider it very superior to any plan that I have tried; it reduces the hitherto tedious and uncertain process of retting to a simple mechanical operation, occupying a certain number of hours, and requiring a certain number of hands each day, irrespective of the temperature or state of the weather. This circumstance alone is one of very great importance, as every person who has gone largely into the manufacture of flax must be well aware of. In my own case, before I adopted your process, I have frequently had employment on one day for several hundreds of hands, when, perhaps, on the next day, twenty hands could not be employed; the uncertainty is now quite got rid of.

"'The yield from the same department of straw manufactured by your process, as compared with any other I have used, is very much greater. I have found the average yield from flax stepped in the ordinary way, in pools, and dried on the grass, to be about 20 stones to the ton of dried straw—very rarely, indeed, has it exceeded 24 stones to the ton; whilst the average yield from a ton of straw, prepared on your plan, averages 21lbs. to the cwt., and often goes to 25lbs., the former quantity being nearly 26 stone to the ton, and the latter at the rate of 30¾ to the ton. Another very great advantage attends your process, which I consider of very great importance—that is, the total absence of any unpleasant or offensive smell. Nothing of the kind is perceptible; on the contrary, the liquid, or solution, taken from the chambers and mixed with the chaff and bolls, the refuse of the seeding loft, is eaten by pigs, young cattle, and horses with avidity. There are now upwards of 50 pigs, in excellent condition, on the premises here, which have received no other food for the last two months except some green clover, in small quantities.

"'When I first began to manufacture flax on your plan, I found a very great prejudice against it; the buyers looked down on it, and would not give a remunerating price for it; but, having had some of it spun myself, and got the result of each operation in the mill, I was convinced it only required time to secure its proper place in the market, and that anticipation has been fully realised, for, lately several buyers have come to the works and made purchases at fair prices—for one lot 13s per stone was offered but refused. The tow produced from the scutching I consider as superior to that produced from flax produced in the ordinary way, and the yield of yarn from it much more, and of a better and more uniform quality.—Yours very truly,

(Signed) "JOHN MACNEIL.

"'W. Watt, Esq., at Messrs. Leadbetter & Co.'s, Belfast.'

"We had also the satfsfaction of procuring the results of two experiments, conducted by neutral parties, in which the same raw material was operated on (a matter of first importance when conclusions are first to be established), and in which the respective merits of Watt's and other systems were tested."

Mr. Leadbetter then read letters from Mr. Kirkwood, of Canada, and from Mr. Niven, of Chrome Hill, detailing the result of some satisfactory trials of Watt's process.

"Of the ten works alluded to, we have established four; one at Lisburn, a second at Newtownards, and two others in Scotland, for the carrying out of this process, and are prepared to take the produce of from five to six hundred acres of flax every season for each of these places.

"We would remark that, in the Lisburn district, where flax has been hitherto comparatively little grown, Mr. Walter Stannus, successor to our respected Dean Stannus, as agent for Lord Hertford, has, in the most liberal manner, proposed to furnish any of his tenants with a supply of the best foreign seed this season, payable following Autumn. In this manner we anticipate the growth of flax will be much increased."

There was (he continued) a very important question connected with the subject which he desired to bring under their notice. The proceedings of the day had shewn the difficulties experienced by farmers in saving their seed, and at the same time obtaining good fibre from their straw. Now, it was important to remember, in judging of the results obtained by any new system of flax preparation, that a first principle of such systems was the saving of the seed. (Hear.) If, therefore, the straw was carelessly saved, as was too much the case, fine fibre could not be expected. He humbly thought that the main reason why the farmer obtained an inferior flax when he saved his seed, was owing to his ignorance of the importance of being careful to save his straw from the effects of exposure to the weather. The promoters of every new system of flax preparation were exposed to the drawbacks of working straw which had not been carefully saved. (Hear.) He thought, therefore, it was only fair that every new system should be judged of keeping these considerations in view. Mr. Leadbetter then proceeded to make observations on the valuable assistance rendered to the farmer by the establishment of flax factories, especially large farmers who could not undertake the ordinary steeping process. Although the present had not been a very successful year, there was one gentleman, amongst others, on the Marquis of Downshire's estate, who told him (Mr. Leadbetter) that his return had been highly satisfactory. He had received £103 for the produce of seven Irish acres—(hear, hear)—without the trouble of steeping. In the Hertford estate, Mr. Bradbury had written to him to say that he had made £13 16s on a statute acre of flax. (Hear, hear.) He should mention that the respected agent of the Hertford estate, Mr. Stannus, successor to Dean Stannus, whom he saw present—had afforded them every facility in the erection of their buildings on that estate—(hear, hear, and cheers)—and that the Marquis of Londonderry had given him the very best site which could be procured near Newtownards. They had also works in Scotland, where the Duke of Montrose had rendered them every assistance. It could not be too widely known, he thought, among the farming classes, that at these works the farmers would receive a fair price for their produce, without being under the necessity of steeping it themselves, and preparing it for the market. He did not think he could add anything additional to the facts contained in the report he had read to the meeting, which sufficiently spoke for themselves. (Applause.)

On the motion of the CHAIRMAN, and carried with acclamation, a vote of thanks was given to Mr. Fane and Mr. Leadbetter.

The LORD BISHOP briefly moved the next resolution, which was seconded by Mr. JOHN PRESTON.

The following letters, referring to M‘Bride's Patent Scutching Machine, were then read by the Secretary:—

“*Roan Spinning Mills, Dungannon, Nov.* 24, 1853.

“DEAR SIR,—In compliance with your letter of the 19th inst., I went to see Mr. M‘Bride's scutching machine at work in the Messrs. M‘Clelland's scutch mills, Dungannon, and to say the least of it I was more than astonished with its performance. In my opinion, it is the only machine you might call a perfectly self-acting machine. When I was present, there was 28 pounds of flax straw put into the machine, which produced 5 pounds of well scutched flax.—I am, dear Sir, yours truly,

“JOHN STEVENSON.

"*Dungannon Spinning Mills, Nov.* 24, 1853.

"DEAR SIR,—We are glad to give a very satisfactory opinion of M'Bride's Patent Scutching Machine. We are well satisfied with its performance, and the friends invited to give an opinion (and whom we consider capable of doing so) have expressed themselves well satisfied with its success.—We are, yours truly,

"ROBERT & JAS. M'CLELLAND, jun.

Mr. J. HIND moved the appointment of office-bearers for the ensuing year; seconded by Mr. JAMES CAMPBELL.

Dean STANNUS moved that Lord Erne should leave the chair, and that Lord Lurgan be called thereto. The very rev. gentleman in felicitous terms spoke of the late Lord Lurgan, and concluded by moving the thanks of the meeting to Lord Erne.

Sir ROBERT BATESON, Bart., seconded the motion, which was passed by acclamation.

The meeting, after a few words from Lord Lurgan, seperated.

The following letter from the Right Hon. Sir J. Young, Bart., M.P., was received after the close of the meeting:—

"*Palace, Armagh*, 25*th November*, 1853.

"SIR,—I am much obliged by the invitation of the Committee of the Royal Society for the Promotion and Improvement of the Growth of Flax in Ireland, to attend the meeting this day, and hear their report read. It would have given me great pleasure to do so, for, the object is one in which I have long taken much interest; but unfortunately I had, previous to the receipt of your communication, entered into engagements which prevented my availing myself of the opportunity of evincing how highly I appreciate the labours of the society.—I am, Sir, your obedient servant,

"JOHN YOUNG.

"Jas. MacAdam, jun., Esq."

RESOLUTIONS.

At the Thirteenth Annual General Meeting, held in the Society's Rooms, Commercial Buildings, Belfast, on Friday, 25th November, 1853,

The Earl of ERNE, *Vice-President, in the Chair,*

the Annual Report of the Committee and Statement of Accounts having been read, the following Resolutions were unanimously agreed to:—

Moved by William Kirk, Esq., M.P., seconded by Matthew J. Anketell, Esq., D.L., J.P., and resolved—

"I. That the Annual Report and Statement of Accounts, now read, be received and adopted, and that they be printed for circulation, with such other information as the Committee may deem desirable."

Moved by John Thomson, Esq., J.P., seconded by Fitzherbert Filgate, Esq., J.P., and resolved—

"II. That in availing themselves of the Society's instrumentality in aiding the extension of flax cultivation to the South and West of Ireland, the Government have consulted the best interests of the agricultural and manufacturing population of this country."

Moved by Sir Robert Bateson, Bart., seconded by John Sharman Crawford, Esq., J.P., and resolved—

"III. That the production, at home, of this crop, whose fibre furnishes the raw material of the great staple manufacture of Ireland, is, in every point of view, of high importance; and that the present position of our political relations with Russia, which is, as yet, the chief source of supply of this material, lends an additional argument, if such were required, to the necessity of increasing the home production, until the wants of the trade be fully supplied."

Moved by J. J. Richardson, Esq., M.P., seconded by J. Temple Reilly, Esq., D.L., J.P., and resolved—

"IV. That the loss entailed on this country by the neglect of the seed of the flax crop is much to be deplored, and that the Society shall continue to use its best exertions to induce the farmers to economise this valuable product."

Moved by Richard Davison, Esq., M.P., seconded by Thos. Greg, Esq., J.P., and resolved—

"V. That the option afforded to growers of flax of disposing of their crop, at maturity, by the persons who are carrying out the different systems of steeping, is of much importance; and that the Committee shall continue carefully to inquire into all inventions of this nature which may be brought under their consideration."

Moved by the Lord Bishop of Down, seconded by John Preston, Esq., and resolved—

"VI. That improvements in the scutching of the fibre are highly desirable, in order that the yield may be increased, and the expense of the process lessened, and that this meeting would urge on the Committee to make known the results of every invention calculated to effect these ends."

Moved by John Hind, Esq., jun., seconded by James Campbell, Esq., and resolved—

"VII. That the following be the office-bearers of the Society for the ensuing twelve months:—

"PATRONS:—Her Most Gracious Majesty the Queen, and H.R.H. Prince Albert.

"VICE-PATRONS:—The Earl of St. Germans and the Earl of Clarendon.

"PRESIDENT:—The Marquis of Downshire.

"VICE-PRESIDENTS:—Marquis of Waterford, Marquis of Hertford, Earl of Erne, Earl of Caledon, Viscount Massereene, Viscount Dungannon, Viscount Bernard, M.P., Lord Rossmore, Lord Monteagle, Lord Lurgan, Lord Clermont, the Lord Bishop of Down, &c., Sir J. M. Stronge, Bart., Sir R. Bateson, Bart., Sir. W. Verner, Bart., Sir Robert Kane, Thomas Conolly, M.P., H. M'C. Cairns, M.P., Very Rev. the Dean of Ross, W. S. Crawford, D.L., J.P., A. Shafto Adair, D.L., J.P.

"COMMITTEE—Henry Anderson, J.P.; W. G. Andrews, John Birney, J.P.; Rev. F. Blakely, John Borthwick, James Campbell, John Charters, G. J. Clarke, J.P.; William Ewart, jun.; F. Filgate, J.P.; R. F. Gordon, J.P., George Greer, J.P.; John Hancock, J.P.; John Herdman, James Hind, Victor C. Kennedy, S.K. Mulholland, J.P.; Bobert M'Kibbin, M.D.; Richard Niven, John Preston, J. T. Reilly, D.L. J.P.; J. J. Richardson, M.P.; C. G. M. Skinner, J.P.; Samuel Walker."

On the motion of the Noble CHAIRMAN, it was

RESOLVED—"That the thanks of the Meeting be given to Cecil Fane, Esq., and C. J. Pownall, Esq., of London, and to R. Leadbetter, Esq., of Belfast, for the information they have communicated relative to their processes of treating flax."

(Signed)

ERNE, Chairman.
JAMES MACADAM, Jun., Secretary.

On the motion of the Very Rev. the Dean of Ross, seconded by Sir Robert Bateson, Bart., the Earl of Erne having left the Chair and Lord Lurgan being called thereto, the thanks of the Meeting were given to the Noble Earl for his able and dignified conduct in the Chair, and his constant watchfulness of the Society's interests.

(Signed)

LURGAN, Chairman.
JAMES MACADAM, Jun., Secretary.

APPENDIX.

DIRECTIONS

FOR THE

PROPER MANAGEMENT OF THE FLAX CROP,

COMPILED BY THE COMMITTEE

OF THE

ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

THE following directions have been carefully arranged from the mass of information obtained by the Society and their agriculturists, during their thirteen years' experience in the improved system of management:—

SOIL AND ROTATION.

By attention and careful cultivation, good flax may be grown on various soils; but some are much better adapted for it than others. The best is a sound, dry, deep loam, with a clay subsoil. It is very desirable that the land should be properly drained and subsoiled; as, when it is saturated with either underground or surface water, good flax cannot be expected.

Without method, there cannot be success—different soils require a difference of rotation. In the best soils of Flanders, flax is grown in the third year of a seven-course rotation, or the fifth year of a ten-course rotation.

It is not considered generally advisable to grow flax more frequently than once in ten years; not because it exhausts the land more than any other crops, but because good *flax* cannot be had at short intervals, on the same soil.* In Belgium, it invariably follows a corn crop—generally oats; and in this country, where oats is such a usual crop, the same system might be profitably pursued:

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* The following rotation, which would bring flax once in ten years, has been proposed:—First year, potatoes; second, barley, laid down with grasses; third year, cut for soiling; fourth year, pasture; fifth year, flax, or the one-half might be better in flax, the other in oats, so that, with the return of the rotation, which would be in five years, the flax could be put on the ground which, in the last rotatory course, was under corn, throwing a range of ten years between the flax crops coming into the same ground.

A gentleman of much practical knowledge recommends the following as being the most profitable:—1. Oats after the grass and clover. 2. Flax pulled in August; then but it must be understood, that it is only after oats following a green crop or old lea, and never after two or three succeeding crops of oats, which bad practice still prevails in some districts. It is a very general error among farmers, to consider it necessary that flax should follow a potato crop. Except on very poor soils, a better crop will be produced after grain, and the double profit of the grain and flax secured. If old lea be broken up, and potatoes planted, followed by a grain crop, a very fine crop of flax may be obtained in the ensuing year.

PREPARATION OF THE SOIL.

One of the points of the greatest importance, in the culture of flax, is by thorough draining, and by careful and repeated cleansing of the land from weeds, to place it in the finest, deepest, and cleanest state. This will make room for the roots to penetrate, which they will often do to a depth equal to one-half the length of the stem above ground.

After wheat, one ploughing may be sufficient, on light friable loam, but two are better; and, on stiff soils, three are advisable—one immediately after harvest, across the ridges, and two in Spring, so as to be ready for sowing in the first or second week of April. Much will, of course, depend on the nature of the soil, and the knowledge and experience of the farmer. The land should be so drained and subsoiled, that it can be sown in flats, which will give more even and much better crops. Subsoiling should not be done at a less interval than two years prior to the flax crop. This gives the land time to consolidate, But, until the system of thorough-draining be general, it will be necessary, after oats, to plough early in Autumn, to the depth of six or eight inches. Throw the land into ridges, that it may receive the frost and air; and make surface drains to carry off the rains of Winter. Plough again in Spring, three or four inches deep, so as to preserve the Winter surface for the roots of the flax. The Spring ploughing should be given some time before sowing, to allow any seeds of weeds in the land to vegetate, and the harrowing in of the flaxseed will kill them, and save a great deal of after weeding. Following the last harrowing it is necessary to roll, to give an even surface and consolidate the land, breaking up this again with a short-toothed or seed-harrow, before sowing, which should be up and down, not across the ridges or anglewise.

SOWING.

The seed best adapted for the generality of soils is Riga, although Dutch has been used, in many districts of country, for a series of

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ploughed and harrowed in with two cwt. guano and two cwt. gypsum; then sown with rape. 3. Potatoes or turnips, well manured, 4. Wheat, sown in Spring, with clover and rye-grass. 5. Hay and clover. 6. Grazing. 7. Oats. 8. Flax and Winter vetches; guano, as before mentioned. 9. Turnips, well manured. 10. Barley, sown with rye-grass and clover. 11. Clover and hay. 12. Grazing. 13. Oats.

years, with perfect success. American seed does not generally suit well, as it is apt to produce a coarse, branchy stem. If used, it should be on deep, loamy, soils. In buying seed, select it plump, shining, and heavy, and of the best brands, from a respectable merchant. Sift it clear of all the seeds of weeds, which will save a great deal of after trouble, when the crop is growing. This may be done by fanners, and through a wire sieve, twelve bars to the inch. Home-saved seed has produced such excellent crops, of late, that it is strongly recommended that every farmer should only sow, each year, as much foreign seed as would produce a sufficient quantity for his flax crop of the following season.* The thinner portion of the crop would be the best for this purpose; as, when flax grows thin, it produces much seed. This plan, besides the saving effected in the price of foreign sowing seed, would effectually secure the farmer from any danger of loss from fraudulently made-up seed. It will be best, in most cases, to use the seed which is saved from this, in the following year, for feeding, or to sell it for the oil mills, although it often produces good crops. The proportion of seed may be stated at three and a-half imperial bushels to the Irish or Plantation acre; and so on, in proportion to the Scotch or Cunningham, and the English or Statute acre. It is better to sow too thick than too thin; as, with thick sowing, the stem grows tall and straight, with only one or two seed capsules at the top; and the fibre is found greatly superior, in fineness and length, to that produced from thin-sown flax, which grows coarse, and branches out, producing much seed, but a very inferior quality of fibre. The ground being pulverised and well cleaned, roll and sow. If it has been laid off without ridges, it should be marked off in divisions, eight to ten feet broad, in order to give an equable supply of seed. After sowing, cover it with a seed harrow, going twice over it—once up and down, and once across or anglewise; as this makes it more equally spread, and avoids the small drills made by the teeth of the harrow. Finish with the roller, which will leave the seed covered about an inch—the proper depth. The ridges should be very little raised in the centre, when the ground is ready for the seed, otherwise the crop will not ripen evenly; and, when land is properly drained, there should be no ridges. The sowing of clover and grass seeds along with the flax, is not advised, when it can be conveniently avoided, as these plants always injure the root ends of the flax. But carrots may be sown, in suitable soils, in drills, so that the person pulling the flax may step over the rows, which may be afterwards hoed and cleaned, and should have some liquid manure. A stolen crop of rape or Winter vetches, or of turnips of the stone or Norfolk globe varieties, may be taken, after the flax is pulled. Rolling the ground after sowing is very advisable, care being taken not to roll when the ground is so wet that the earth adheres to the roller.

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* The produce of seed averages about 12 bushels the Statute acre, so that the seed saved off one Statute acre would sow about five.

MANURE FOR THE FLAX CROP.

Recent chemical investigations have shewn that the fibre of flax does abstract from the soil certain matters, although not in so large a proportion as several other commonly cultivated crops. To supply to the soil all the matters which the plant requires, with the exception of what is abstracted by the seed, which should be returned by saving the latter, and applying the manure of the cattle fed upon it, or an equivalent if the seed be sold, so as to leave the land in the same state of fertility as before, the following compound has been proposed, by Professor Hodges, as a manure, which may be sown broadcast on the land, prior to the last harrowing before sowing the flaxseed:—

FOR A STATUTE ACRE OF LAND.

		s.	d.
Muriate of Potash, 30 lbs., ...	cost about	3	0
Chloride of Sodium (common salt), 28 lbs.,	"	0	3
Burned Gypsum, powdered, 24 lbs., ...	"	0	6
Bone dust, 54 lbs., ...	"	3	3
Sulphate of Magnesia (Epsom Salts), 56 lbs.,	"	4	0
		11	0

WEEDING.

If care has been paid to cleaning the seed and the soil, few weeds will appear, but if there be any, they must be carefully pulled. It is done in Belgium by women and children, who, with coarse cloths round their knees, creep along on all-fours. This injures the young plant less than walking over it (which, if done, should be by persons whose shoes are not filled with nails). They should work, also, facing the wind, so that the plants laid flat by the pressure may be blown up again, or thus be assisted to regain their upright position. The tender plant, pressed one way, soon recovers; but, if twisted or flattened by careless weeders, it seldom rises again.

PULLING.

The time when flax should be pulled is a point of much nicety to determine. The fibre is in the best state before the seed is quite ripe. If pulled too soon, although the fibre is fine, the great waste in scutching and hackling renders it unprofitable; and if pulled too late, the additional weight does not compensate for the coarseness of the fibre. It may be stated, that the best time for pulling is, when the seeds are beginning to change from a green to a pale brown colour, and the stalk to become yellow, for about two-thirds of its height from the ground. When any of the crop is lying, and suffering from wet, it should be pulled as soon as possible, and kept by itself. So long as the ground is undrained, and imperfectly levelled before sowing, the flax will be found of different lengths.

In such cases, pull each length separately, and steep in separate pools, or keep it separate in the same pool. Where there is much second growth, the flax should be caught by the puller just underneath the bolls, which will leave the short stalks behind. If the latter be few, it is best not to pull them at all, as the loss from mixture and discoloration by weeds would counterbalance the profit. If the ground has been thorough-drained, and laid out evenly, the flax will be all of the same length. It is most essential to take time and care to keep the flax even, like a brush, at the root ends. This increases the value to the spinner, and, of course, to the grower, who will be amply repaid, by an additional price for his extra trouble. Let the handfuls of pulled flax be laid across each other diagonally, to be ready for the

RIPPLING,

Which should be carried on at the same time, and in the same field, with the pulling. If the only advantage to be derived from rippling was the comparative ease with which rippled flax is handled, the practice ought always to be adopted; but, besides this, the seed is a most valuable part of the crop, being worth, if sold for the oil mill, £3 per acre, and if used for feeding stock of all kinds, at least £4 per acre. The apparatus is very simple. The ripple consists of a row of iron teeth screwed into a block of wood. This can be procured in Belfast, or may be made by any handy blacksmith.* It is to be taken to the field, where the flax is being pulled, and screwed down to the centre of a nine-feet plank, resting on two stools. The ripplers may either stand or sit astride at opposite ends. They should be at such a distance from the comb as to permit of their striking it properly and alternately. A winnowing sheet must be placed under them, to receive the bolls as they are rippled off; and then the ripplers are ready to receive the flax just pulled, the handfuls being placed diagonally, and bound up in a sheaf. The sheaf is laid down at the right hand of the rippler, and untied. He takes a handful with one hand, about six inches from the root, and a little nearer the top with the other. He spreads the top of the handful like a fan, draws the one-half of it through the comb, and the other half past the side; and, by a half-turn of the wrist, the same operation is repeated with the rest of the bunch. Some, however, prefer rippling without turning the hand, giving the flax one or two pulls through, according to the quantity of bolls. The flax can often be rippled without being passed more than once through the comb. He then lays the handfuls down at his left side, *each handful* crossing the other, when the sheaf should be carefully tied up and removed. The object of crossing the handfuls so carefully, after rippling, when tying up the beets for the steep is, that they will part freely from each other, when they are taken to spread out on the grass, and not interlock, and be put out of their even order, as would otherwise be the case. If the weather be dry, the bolls should be kept in the field, spread on winnow-cloths, or other contrivance for drying; and, if turned from time to time, they will win. Passing the bolls first through a coarse riddle, and afterwards through fanners, to remove straws and leaves, will facilitate the drying. If the weather be moist, they should be taken in-doors, and spread out thinly and evenly on a barn floor, or on a loft, leaving windows and doors open, to allow a thorough current of air, and turned twice a-day. When nearly dry, they may be taken to a corn kiln (taking care not to raise it above Summer heat), and carefully turned, until no moisture remains. By the above plan of *slow* drying, the seed has time to imbibe all the juices that remain in the husk, aud to become perfectly ripe. If it be taken at once from the field, and dried *hurriedly* on the kiln, these juices will be burned up, and the seed will become shrivelled and parched, little nutritious matter remaining. In fine seasons, the bolls should always be dried in the open air, the seed threshed out, and the heaviest and plumpest used for sowing or crushing. The light seeds and chaff form most wholesome and nutritious feeding for cattle. Flax ought not to be allowed to stand in the field, if possible, even the second day; it should be rippled as soon as pulled, and carried to the water as soon as possible, that it may not harden.

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* The best ripples are made of half-inch square rods of iron, placed with the angles of iron next the ripplers, 3-16ths of an inch asunder at the bottom, half-an-inch at the top, and 18 inches long, to allow a sufficient spring, and save much breaking of flax. The points should begin to taper 3 inches from the top.

WATERING.

This process requires the greatest care and attention. River water is the best. If spring water has to be used, let the pond be filled some weeks, or months, if possible, before the flax is put in, that the sun and air may soften the water. That containing iron or other mineral substances should never be used. If river water can be had, it need not be let into the pond sooner than the day before the flax is to be steeped. The best size of a steep pool is 12 to 18 feet broad, and 3½ to 4 feet deep. Place the flax loosely in the pool, in one layer, somewhat sloped, and in regular rows, with the root end underneath; the tie of each row of sheaves to reach the roots of the previous one; cover with moss sods, or tough old lea sods, cut thin, laid perfectly close, the sheer of each fitted to the other. Before putting on the sods, a layer of rushes or rag-weeds is recommended to be placed on the flax, especially in new ponds. As sods are not always at hand, a light covering of straw may do, with stones laid on it, so as to keep the flax just under the water; and as the fermentation proceeds, additional weight should be laid on—to be removed as soon as the fermentation ceases, so as not to sink the flax too much in the pool. Thus covered, it never sinks to the bottom, nor is affected by air or light. A small stream of water, allowed to run through a pool, has been found to improve its colour. In this case, if the pools are in a line, the stream should be conducted along the one side, and run into each pool separately, and the water of each pool run off, along the opposite side, in a similar manner. It will be sufficiently steeped, in an average time, from eight to fourteen days, according to the heat of the weather and the nature of the water. Every grower should learn to know when the flax has had enough of the water, as a few hours too much may injure it. It is, however, much more frequently *under*-watered than *over*-watered. The best test is the following:—Try some stalks, of average thickness, by breaking the *shove*, or woody part, in two places, about six or eight inches apart, at the middle of the stalk; catch the broken bit of wood, and if it *will pull freely out, downwards, for that length, without breaking or tearing the fibre, and with none of the fibre adhering to it*, it is ready to take out. Make this trial every six hours, after fermentation subsides, for sometimes the change is rapid. Never lift the flax roughly from the pool, with with forks or grapes, but have it carefully handed out of the flax drain by men standing in the water. It is advantageous to let the flax drain twelve to twenty-four hours, after being taken from the pool, by placing the bundles on their root ends, close together, or on the flat, with the slope; but the heaps should not be too large, otherwise the flax will be injured by heating.

There are two new systems of steeping or retting flax, on a large scale, now in operation. The one is by hot water, or what is called Schenck's method; and the other by steam, or Watt's method. In both cases they are carried on, on a large scale, by persons who purchase the flax straw from the farmers, as pulled and dried on the Courtrai system (see page 37). Both plans are protected by patents, and authorization to adopt them must be had of the patentees.*

SPREADING.

Select, when possible, clean, short, thick pasture ground for this operation; and mow down and remove any weeds that rise above the surface of the sward. Lay the flax evenly on the grass, and spread thin and very equally. If the directions under the head of rippling have been attended to, the handfuls will come readily asunder, without entangling. Turn it two or three times while on the grass (with a rod about eight feet in length, and an inch and a-half in diameter), that it may not become of different shades, by the unequal action of the sun, which is often the case, through inattention to this point. Turn it when there is a prospect of rain, that the flax may be beaten down a little, and thus prevented from being blown away.

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* By addressing a communication to Messrs. Bernard & Koch, Cregagh Flax Works, Belfast, terms for Schenck's system may be ascertained, with full particulars of the apparatus required; and, for terms and particulars of Watt's method, address Messrs. J. Leadbetter and Co., Bedford-street, Belfast.

LIFTING.

Six to eight days if the weather be showery, or ten to twelve if it be dry, should be sufficient on the grass. A good test of its being ready to lift is, to rub a few stalks from the top to the bottom; and, when the wood breaks easily, and separates from the fibre, leaving it sound, it has had enough of the grass. Also, when a large proportion of the stalks are perceived to form a *bow and string* from the fibre contracting and separating from the woody stalk. But, the most certain way is, to prove a small quantity with the hand-break or in a flax mill. In lifting, keep the lengths straight and the ends even, otherwise great loss will occur in the rolling and scutching. Let it be set up to dry for a few hours, and afterwards tie it up in small bundles; and, if not taken soon to be scutched, it will be much improved by being put up in small stacks loosely built, with stones or brambles in the bottom to keep it dry, and allow a free circulation of air. Stacks built on pillars would be the best.

DRYING,

By fire, *is always most pernicious.* If properly steeped and grassed no such drying is necessary; but, to make it ready for breaking and scutching, exposure to the sun is sufficient. In some districts it is put to dry *on kilns*, in a damp state, and is absolutely burned before it is dry, and the rich oily appearance of the flax is always greatly impaired. On this point the Society can scarcely speak too strongly, as the flax is either destroyed or rendered not worth one-half of what it would be if properly prepared.

BREAKING AND SCUTCHING,

If done by hand, should be on the Belgian system, which is less wasteful than that practised in Ireland. If by milling, the farmer will do well to select those mills in which the improved machinery has been introduced. The Society would also recommend that the farmer should endeavour to have his flax scutched by a mill-owner who pays his men by the day, and not by the stone, even if it should cost him higher in proportion; the system of paying the scutchers by the stone rendering them more anxious to do a large quantity in the day than to produce a good yield from the straw.

THE COURTRAI SYSTEM.

This is the mode in which flax should be saved for steeping on Schenck's or Watt's patent systems. It requires to be very carefully done, as inattention will reduce the value of the straw, and yield inferior fibre. When made up for drying, in large sheaves, the straw is much injured, the outside stalks being much discoloured by the heat of the sun before the inside of the sheaf is dry. The flax stems should be put together in bunches, about one-half larger than a man can grasp in one hand, spread a little, and laid on the ground in rows after each puller; the bunches laid with tops and roots alternately, which prevents the seed-bolls from sticking to each other in lifting. It should be stooked as soon after pulling as possible, and never allowed to remain over night unstooked, except in settled weather. The stooking should go on at the same time as the pulling, as, if flax is allowed to get rain while on the ground, its colour is injured. A well-trained stooker will put up the produce of a Statute acre, or more, in good order, in a day, with two boys or girls to hand him the bunches. The flax should be handed with the tops to the stooker. The handfulls, as pulled, are set up, resting against each other—the root ends spread well out, and the tops joining like the letter A. The stooks are made eight to ten feet long, and a short strap keeps the ends firm. The stooks should be very narrow on the top, and thinly put up, so that they may get the full benefit of the weather. In six or eight days, at most, after being pulled, the flax should be ready for tying up in sheaves of the size of corn sheaves. It is then ricked, and allowed to stand in the field until the seed is dry enough for stacking. To build the rick, lay two poles parallel on the ground, about a foot asunder, with a strong upright pole at each end. The flax is then built, the length of a sheaf in thickness or breadth. The bottom poles should be laid North and South, so that the sun shall get at both sides of the rick during the day. In building, the sheaves should be laid tops and roots alternately, built seven to eight feet high, and finished on the top by laying a single row of sheaves lengthwise, or across the others, and then another row as before, but with the tops all the same way, which gives a slope to throw off rain, and finished by putting on the top a little straw, tied with a rope. In this way, if properly built, it will stand secure for months. It can be stacked at leisure, or put in a barn, the seed taken off during the Winter, and the flax steeped in the following May; or it may be kept stacked, without receiving any injury, for two or three years, or even longer.

MR. WARNES'S (OF TRIMINGHAM) SYSTEM OF BOX FEEDING.

Summer.—Rye-grass and clover, or any other green crop, cut into chaff of about an inch long, with the addition of ground linseed made into compound. Winter.—Seven-eighths straw—one-eighth hay, with turnip tops or wurzel leaves cut into chaff, with the addition of linseed as above. *To make the compound*, fill the furnace with water to within six inches, and, when boiling, strew by hand one-fifth of linseed meal to four-fifths of water, a boy stirring the meal in, till it is well mixed—(damp the fire); let the mucilage simmer about five or six inches, when it will become a strong jelly, Into a large tub put about three bushels of the chaff, adding enough of the mucilage to wet it; mix and ram well down, then add more chaff, &c., mixing and ramming down every three baskets. The compound is then covered over, and in about two hours the mucilage, being absorbed by the chaff, may be given to the cattle. If it is wished to *push the cattle on*, sprinkle a small proportion of the meal of barley, or other corn, upon which layer of the chaff and mucilage, also Swedish turnips, carrots, or wurzel, cut small, may be added, to give the compound a flavour. Altogether, the above compound will be found, at the present juncture, extremely economical for *fattening*, rearing, or maintaining store stock. DIRECTIONS FOR FEEDING. SUMMER.—*(At Five in the Morning and Three in the Afternoon.)*—Give each beast about half-a-bushel of the compound, feeding the remainder of the day with chaff. Water once a-day. WINTER.—*(Morning, Five o'clock.)*—Begin with half-a-peck of the compound to each beast; continue this food till the beasts are nearly satisfied. *(At Seven and Nine.)* Feed with half-a-bushel of cut Swedish turnips to each, at twice. *(Eleven.)*—A feed of the compound. *(Afternoon, at One and Three.)* —As many Swedes as the beast will eat, *a little at a time*. *(Six.)*—A good feed of compound, leaving for the night. The boxes or sheds in which the cattle are kept must be sparingly littered twice-a-day, and cleaned out when full. Food to be given a *little* at a time. UTENSILS.—An iron furnace, to hold forty gallons; an iron stirrer (like a mashing stick); an iron bowl, with a handle; a linseed crusher—tub or stone cistern of about 100 gallons—wooden rammer; a bushel basket—chaff cutter—turnip cutter; a fork, with four flat prongs; a common bucket, with iron handle; a skip or box to hold about a peck; a bin, with partitions for linseed before and after crushing. In fixing the boiler, it should have a curb of wood, six inches deep, sloping back; this will prevent the mucilage boiling over. [For directions to make compound of grain, and other particulars, see Mr. Warnes's book, to be had of all booksellers.]

EXTRACTS

FROM THE MINUTES OF

MONTHLY COMMITTEE MEETINGS

FROM 1st NOVEMBER, 1852, TO 1st NOVEMBER, 1853.

23d February, 1853.

A letter read from Messrs. Richardson and Co., Lambeg, giving a very favourable report on the bleaching qualities of linen made from flax prepared by Watt's patent method.

A member of Committee exhibited some yarn, spun from Watt's flax, which had been returned by the manufacturer, who was unable to bring it to a proper colour by boiling.

A sample of flax, steeped by Schenck's system and afterwards wet-rolled, was shewn, and appeared much improved by the latter operation.

30*th March.*

Two samples of bleached yarn were shewn, one of them having been spun from Watt's flax, and the other from fibre prepared by the common country steep, both in a precisely similar manner. The latter was much whiter than the former.

Attention was drawn to the tow-cleaner, invented by Messrs. Calvert and Garnett, Cleckheaton, Yorkshire, and samples of refuse scutching-tow, so prepared, exhibited. It appeared that this machine was capable of cleaning the fibre out of waste formerly burnt, and the fibre so prepared was valued at £9 to £10 per ton.

27*th April.*

Reference was made to a process of retting, invented by Mr. Buchanan. The process consisted of passing a current of hot water through a series of chambers, the time required being 12 hours.

Another new retting process, the invention of M. Terwangne, of Lille, as communicated by that gentleman, was brought forward. The basis of his plan was retting in hot water; but he got rid of the disagreeable smell of the steep-water, and rendered it useful as manure, by employing chalk and wood charcoal, in powder, in the vats.

A pamphlet, published by M. Mareau, who had been deputed by the French Government to report upon the flax question, was laid on the table.

This report referred, prominently, to a certain variety of the flax plant, bearing white flowers; which, though coarser in the fibre, was stated to be hardier than the blue flowered kind, ordinarily cultivated, to succeed upon poor soils where the latter failed, and to produce more than double the quantity of seed.

Ordered that some of the seed of this variety be procured for experiment in Ireland.

Report upon arrangements made with the Inspector of Agricultural Schools, National Board of Education, for trying the effect of different manners on the flax crop, to be carried out on the Glasnevin, Athy, and Cork Model Farms. The experiments to be each on a rood of land, one to be without manure, and the others with guano, nitrate of soda, rape dust, and Dr. Hodges' compound.

A packet of the seed of the *Mâ* plant (urtica nivea) or China grass, was received from Dr. Bowring, H.B.M. Consul at Canton, China, for distribution among some of the members of the Society, for trial in Ireland.

25th May.

A letter read, from Messrs. Scrive freres, Lille, in which they expressed themselves pleased with the results of wet-rolling, after Schenck's steep, as greatly improving the quality of the fibre.

Samples of flax from Mr. Pownall exhibited in illustration of wet-rolling and washing, and approved of; also specimens of bleached flax, prepared by the same gentleman. With regard to the latter, the meeting did not consider it advisable to bleach the fibre before manufacturing.

Seed had been procured from Mr. Haage, of Erfurt, Prussia, of a variety of flax with white flowers, stated to have been discovered by Sir R. Schomburgk, in the course of his travels in Guiana, growing on the banks of the river Orinoco. He considered the plant to be taller than the ordinary blue-flowered variety, and the fibre to be finer and whiter.

Ordered that trials of it be made this year, in comparison with the blue-flowered kind.

Mr. Andrews exhibited to the meeting some stalks of China grass (urtica nivea) grown by him under glass, and dried. The fibres appeared beautifully white and silky, and possessed much strength. He and the Secretary reported on their experiments in growing this plant in the open air.

The Chairman stated that his brother had now grown home-saved flaxseed, several years in succession, without any apparent deterioration in the quality of the crop, and that the foolish prejudice against it was, in consequence, completely overcome in his neighbourhood of Co. Down.

Mr. Andrews said that he had tried Dr. Hodges compound manure for flax, and this year had a very healthy braird from its use.

29th June.

Samples shewn of flax fibre prepared by Mr. Jennings, of Cork, by a process of his invention. He operated upon the scutched fibre, and his view was to render the coarser kinds finer, and to impart to them more oiliness and "spinning quality." His invention was patented, and consisted in boiling scutched fibre in a solution of soap, and discharging the alkali of the soap by means of pyroligneous (acetic) acid, by which means the oleaginous principle was intimately incorporated with the fibre. The samples were much approved by the Committee. Messrs. Marshall, of Leeds, represented that low qualities of flax, so treated, were capable of spinning higher Nos. of yarn than before being subjected to the process.

Specimens of flax, steeped on Schenck's system, from Messrs. Hay, of Dunleer, and Aitken, of Spalding (Lincolnshire), were shewn, and considered of first-rate quality, colour, and cleanness.

A member of committee stated that, in a recent trial, in Glasgow, of the spinning properties of flax fibre prepared, part by Watt's, and part by Schenck's methods, with the addition, to the latter, of wet-rolling, washing, and other improvements, the result had been in favour of Schenck's plan.

Sub-Committee on scutching machines reported favourably on their first trial of M'Bride's invention.

Attention was drawn to a small self-acting machine, invented by Mr. Wilson, Bedford Rettery, near Kilkenny, stated to be capable of scutching 3 cwt. of fibre per week, with the labour of two boys, to cost £15, and to give a yield greater by 10 to 15 per cent. than the ordinary scutch-mill. To be inquired into.

27th July.

Samples of fibre, steeped on Schenck's system, some of them wet-rolled, were shewn by Messrs. T. J. Hughes, Clonmel. All of those which had been wet-rolled exhibited a marked superiority.

Copy of a notice, issued by the agent of extensive estates in Co. Donegal, read to meeting. This notice made it imperative on tenants, who desired, in future years, to receive, as hitherto, a supply of flaxseed for sowing, from their landlord, to save at least one-half of their flax-bolls, by rippling, and the option given them of retaining them for their own use, or of disposing of them to the agent. Rippling combs and full instructions for their use to be provided by the agent.

This notice, appearing likely to effect the great object of encouraging the saving of seed, Committee ordered 6,000 copies to be printed and circulated among Ulster landed proprietors, with full information on the subject, and offers of the services of the Society's Instructors, under certain conditions, to teach the best mode of rippling.

Dr. M'Kibbin referred to the necessity, in seasons such as this, where the flax crop had first been stunted by drought, and had afterwards shot up with great rapidity when rain came, to delay the pulling rather beyond the usual period, as otherwise the fibre would not be matured, owing to its too rapid growth.

31*st August*.

A letter was read, from the President of the Royal Society for Promoting the Culture of Flax in Prussia, calling attention to the quality of Prussian flaxseed for sowing, stating that a considerable quantity of this seed was yearly sent from Tilsit, for shipment at Riga, whence it came to Ireland and elsewhere as Riga seed; that it could be much more cheaply procured at Memel and shipped thence direct to Ireland; and that a barrel had been sent to the Society for trial. Ordered that, when the sowing season arrives, this parcel of seed should be fairly tried against ordinary Riga, and a report made of the result.

28*th September*.

Samples of flax were shown as grown at Riverstown, County Cork, and managed by Mr. De Cock, the Society's Belgian Instructor. The straw had been pulled very green, before the seed had reached beyond its milky state; the stems then dried, part steeped and grassed as usual, and part rolled after steeping. Both appeared of excellent quality, and the latter was much superior, being valued at £105 per ton. From this experiment it appeared that by pulling at an earlier period than usual, the quality of the fibre produced from dried straw would be much finer than had resulted from straw at full maturity, and also that wet-rolling was of much value, in its application to cold water steeped flax.

Mr. Reilly reported that he had wet-rolled some of his flax-straw, as it came from the pool, and that he observed the fibre to be superior to that which he had not so treated.

A letter was read from Mr. Pryor, Halifax, Nova Scotia, who had sent forward a bale of the stems of the Bokhara Clover (melilotus arborea), in order that its qualities for manufacture might be tested.

GOVERNMENT RETURNS OF THE GROWTH OF FLAX IN IRELAND, 1847 TO 185

	COUNTIES.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	Increase of 1853 over 1847.	Proportion of flax in 1853 to area of arable land
		acres.	acres.	acres.	acres.	acres.	acres.	acres.	per cent.	1 acre to
ULSTER.	Antrim, ...	3,037	2,895	4,064	8,106	11,639	9,367	11,470	274.50	every 43.57
	Armagh, ...	7,554	4,832	5,181	9,623	13,121	14,553	19,891	163.37	13.34
	Cavan, ...	1,598	1,526	2,182	5,107	8,933	7,552	12,093	657.39	31.40
	Donegall, ...	9,222	11,546	12,662	14,169	20,995	20,799	25,300	174.34	15.54
	Down, ...	6,157	4,384	4,807	9,895	15,114	19,606	27,767	350.99	18.41
	Fermanagh, ...	893	1,131	1,015	1,283	2,808	2,495	3,988	346.58	72.52
	Londonderry, ..	9,029	9,242	11,438	13,445	18,361	17,149	19.141	111.99	16.62
	Monaghan, ...	7,927	5,088	6,775	10,157	13,779	13,670	17,268	117.83	16.55
	Tyrone, ...	8,284	8,905	9,527	13,280	19,025	18,979	24,298	193.31	18.12
	Total Ulster,...	53,701	49,549	57,651	85.065	123,775	124,170	161,216	200.21	21.70
LEINSTER.	Carlow, ...	73	76	22	58	120	67	44	decrease	4,183.15
	Dublin, ...	6	27	16	21	21	1	2	do.	98,031.50
	Kildare, ...	24	17	21	23	48	16	28	16.66	1,399.53
	Kilkenny, ...	71	47	16	32	225	93	78	9.85	6,026.94
	King's, ...	143	101	57	79	259	324	196	37.06	1,720.69
	Longford, ...	221	104	91	318	790	659	735	232.57	260.98
	Louth, ...	322	227	125	388	1,439	1,878	2,189	571.81	81.75
	Meath, ...	344	259	172	343	924	712	576	67.44	950.33
	Queen's, ...	39	17	18	131	171	64	14	decrease	24,458.71
	Westmeath, ...	225	189	81	207	465	247	257	14.22	1,421.04
	Wexford, ...	155	169	115	193	368	347	453	192.25	1,127.37
	Wicklow, ...	21	6	7	8	32	5	2	decrease	140,196.50
	Total Leinster,	1,644	1,239	741	1,801	4,862	4,413	4,574	178.22	866.02
MUNSTER.	Clare, ...	218	457	179	506	1,000	908	966	343.12	471.02
	Cork, ...	212	326	458	853	2,698	1,692	2,399	1031.13	545.59
	Kerry, ...	185	243	136	300	654	664	1,035	459.45	400.59
	Limerick, ...	264	223	94	225	619	311	344	30.30	1,531.61
	Tipperary, ...	213	no return	59	187	603	379	354	66.19	2,383.86
	Waterford, ...	64		11	23	259	167	104	62.81	3,128.31
	Total Munster,.	1,156	1,249	937	2,094	5,833	4,121	5,202	350.00	744.83
CONNAUGHT.	Galway, ...	256	216	54	211	607	540	782	205.46	949.87
	Leitrim, ...	201	144	154	367	904	809	1,337	565.12	186.35
	Mayo, ...	1,101	1,122	524	939	1,450	845	1,188	7.90	418.84
	Roscommon, ...	111	126	35	200	507	373	491	342.33	897.19
	Sligo, ...	142	218	218	363	730	588	705	396.47	412.33
	Total Connaught,.	1,811	1,826	985	2,080	4,198	3,155	4,503	148.64	493.21
	Total Ireland, ..	58,312	53,863	60,314	91,040	138,668	135,859	175,495	200.95	76.65

Taking the produce of scutched fibre at an average of 5 cwt. per acre, and estimating it at the average price of each year, the weight and value of the Irish flax crop, in each year, would be as follows:—

	1847	1848	1849	1850	1851	1852	1853
Tons,.........	**14,580**	**13,466**	**15,078**	**22,760**	**34,655**	**34,252**	**43,874**
Value,........	**£656,100**	**£605,970**	**£678,510**	**£1,024,200**	**£1,628,785**	**£1,644,096**	**£2,544,692**

SCUTCH MILLS

IN

IRELAND.

In 1852 the Committee suggested to Lord Naas, then Chief Secretary for Ireland, that a return of the number and position of scutch-mills, of the number of scutching stocks in each, and of the power employed in driving them, would be an important and interesting document. They pointed out that these returns could be obtained, with little additional trouble, by the constabulary when collecting the returns of crops and stock; and that, if yearly taken in future, an index, explanatory of the tabular statements showing the progressive increase of flax culture, would be afforded. The Committee's suggestion was at once taken up by Lord Naas, and, consequently, the returns, as requested, were collected, and the Committee are now able to place them before the members of the Society—in a digest from the tabular forms received from the Registrar-General. They think it desirable, in the present instance, as no record has hitherto been kept of the Irish scutch-mills, to give a pretty full abstract, shewing the provinces, counties, baronies, and parishes, without going into the detail of townlands.

The classification they have adopted is—

I. A list of the No. of Mills, and of the No. of Stocks in the Mills, in each parish, classing the parishes into baronies, the baronies into counties, and the counties into provinces.

II. An abstract, shewing the No. of mills in each county, and their comparative size, with a column exhibiting the proportion of acres of flax, cultivated in each county, in 1852, to each mill.

III. A list of the No. of Mills and of the No. of Stocks, in each county, with a column appended, shewing the proportion of acres of flax cultivated in each county, in 1852, to each scutching stock.

IV. A table shewing the motive power, employed in Irish scutch-mills, in 1852, whether water, steam, or wind, or a combination of the two former.

1.—RETURN OF THE NUMBER OF SCUTCH-MILLS, AND OF THE NUMBER OF STOCKS IN EACH, IN 1852,

Furnished to the Society by the Registrar General, by Order of Government.

COUNTIES.	BARONIES.	PARISHES.	NO. OF MILLS.	NO. OF STOCKS.
Antrim,	Lower Antrim,	Ballyclug,	2	4
"	"	Connor,	1	3
"	"	Racavan,	5	18
"	"	Skerry,	3	12
"	Upper Antrim,	Doagh Grange,	1	13
"	"	Donegore,	1	2
"	"	Kilbride,	1	3
"	"	Nilteen Grange,	1	9
"	Lower Belfast,	Ballymure,	2	30
"	"	Carnmoney,	1	3
"	"	Raloo,	1	3
"	Upper Belfast,	Derriaghy,	1	4
"	Cary	Armoy,	2	6
"	"	Ballintoy,	1	3
"	"	Billy,	1	6
"	"	Grange of Drumtallagh,	1	4
"	"	Ramoan,	1	4
"	Lower Dunluce,	Ballyrashane,	1	6
"	"	Billy,	2	10
"	"	Derrykeighan,	2	5
"	"	Dunluce,	5	22
"	Upper Dunluce,	Ballymoney,	8	46
"	"	Kilraghts,	1	4
"	"	Loughguile,	7	38
"	Lower Glenarm,	Layd,	1	2
"	"	Tickmacreevan,	1	12
"	Upper Glenarm,	Kilwaughter,	1	6
"	Kilconway,	Dunaghy,	3	12
"	"	Finvoy,	3	7
"	"	Killagan,	1	8
"	"	Loughguile,	1	4
"	"	Rasharkin,	7	38
"	Lower Massareene,	Killead,	3	10
"	Upper Massareene,	Glenavy,	2	21
"	Lower Toome,	Ahoghill,	10	27
"	Upper Toome,	Ballyscullion,	2	10
"	"	Drummaul,	2	14
"	"	Duneane,	1	8
	Total in County Antrim, - - -		90	432
Armagh,	Armagh,	Derrynoose,	2	12
"	"	Eglish,	1	6
"	"	Grange,	1	6
"	"	Keady,	1	8
"	"	Lisnadill,	1	8
"	"	Tynan,	5	32
"	Lower Fews,	Kilcloney,	8	40
"	"	Lisnadill,	2	16
"	"	Loughgilly,	2	22
"	"	Mullaghbrack,	4	24
"	Upper Fews,	Newtownhamilton,	3	18
"	Oneiland, East,	Seagoe,	2	12
"	Oneiland, West,	Drumcree,	6	70
"	"	Grange,	1	4

COUNTIES.	BARONIES.	PARISHES.	NO. OF MILLS.	NO OF STOCKS.
Armagh,	Oneiland, West,	Kilmore,	11	82
”	”	Loughgall,	1	6
”	”	Mullaghbrack,	3	30
”	Lower Orier,	Ballymore,	8	50
”	”	Kilclooney,	3	20
”	”	Killey,	1	9
”	”	Kilmore,	1	6
”	”	Loughgilly,	11	83
”	Upper Orier,	Killevy,	7	76
”	”	Loughgilly,	5	22
”	Tiranny,	Eglish,	2	12
”	”	Tynan,	5	38
	Total in County Armagh,	- - - -	98	724
Cavan,	Clankee,	Bailieborough,	2	14
”	”	Knockbride,	2	10
”	”	Clancock	1	4
”	Clanmahon,	Ballintemple,	1	6
”	Tullygarvey,	Drumgoon,	1	6
”	”	Kildramsherdan,	1	6
	Total in County Cavan,	- - - -	8	46
Donegall,	Inishowen, East,	Clonca,	1	4
”	”	Donagh,	1	4
”	Inishowen, West,	Burt,	13	44
”	”	Lower Fahan,	4	14
”	”	Upper Fahan,	5	19
”	”	Inch,	5	14
”	”	Upper Moville,	1	4
”	”	Muff,	4	13
”	Kilmacrenan,	Aughnish,	7	39
”	”	Clondahorkey,	4	19
”	”	Clondavaddog,	2	6
”	”	Conwal,	10	44
”	”	Gartan,	5	20
”	”	Killygarvan,	1	6
”	”	Kilmacrenan,	7	30
”	”	Raymunterdoney,	2	8
”	”	Tullaghobegly,	1	4
”	”	Tullyfern,	9	51
”	Raphoe,	Allsaints,	14	46
”	”	Conleigh,	6	36
”	”	Convoy,	12	48
”	”	Conwall,	3	10
”	”	Donaghmore,	20	87
”	”	Killea,	5	27
”	”	Kilteevoge,	5	20
”	”	Leck,	10	38
”	”	Raphoe,	18	53
”	”	Raymoghy,	17	55
”	”	Stranorlar,	7	24
”	”	Taughboyne,	20	87
”	”	Urney,	4	22
”	Tirhugh,	Donegal,	3	7
”	”	Drumhome,	5	30
”	”	Kilbarron,	1	4
”	”	Templecarn,	1	8
	Total in County Donegal,	- - -	227	945

COUNTIES.	BARONIES.	PARISHES.	NO. OF MILLS.	NO. OF STOCKS
Down,	Lower Ards,	Bangor,	4	15
"	"	Donaghadee,	6	20
"	"	Greyabbey,	1	19
"	"	Newtownards,	3	42
"	Upper Ards,	Ardquin,	2	23
"	"	Ardkeen,	1	3
"	"	Ballyhalbert,	2	4
"	"	Ballytrustan,	2	6
"	"	Ballywalter,	3	21
"	Lower Castlereagh,	Bangor,	2	6
"	"	Comber,	21	80
"	"	Dundonald,	5	21
"	"	Holywood,	2	15
"	"	Killinchy,	3	15
"	"	Kilmood,	4	14
"	"	Knockbreda,	1	3
"	"	Newtownards,	7	23
"	Upper Castlereagh,	Blaris,	1	6
"	"	Drumbo,	4	22
"	"	Killaney,	1	5
"	"	Kilmore,	4	18
"	"	Knockbreda,	2	24
"	"	Saintfield,	2	15
"	Dufferin,	Killileagh,	1	6
"	Lower Iveagh,	Annahilt,	3	15
"	"	Dromore,	1	3
"	"	Garvaghy,	3	10
"	"	Donaghcloney,	2	26
"	"	Shankhill,	1	3
"	"	Tullylish,	4	34
"	"	Clonduff,	7	58
"	"	Drumballyroney,	4	21
"	"	Drumgooland,	7	38
"	"	Kilcoo,	1	6
"	"	Kilmegan,	2	10
"	"	Maghera,	2	6
"	"	Newry,	3	13
"	Upper Iveagh,	Aghaderg,	7	44
"	"	Annaclone,	3	24
"	"	Clonallan,	7	29
"	"	Donaghmore,	5	34
"	"	Drumgath,	4	22
"	"	Seapatrick,	1	4
"	"	Warrenspoint,	1	12
"	Kinelarty,	Kilmore,	4	18
"	"	Magheradrool,	3	13
"	Lower Lecale,	Ballycalter,	1	3
"	"	Kilclief,	1	3
"	Mourne,	Kilkeel,	3	16
"	Lordship of Newry,	Newry,	10	80
	Total in County Down, ...		174	959
Fermanagh,	Clankelly,	Clones,	1	6
"	Lurg,	Derryvullan,	1	6
"	"	Drumkeeran,	1	4
"	Magheraboy,	Irishmacsaint,	1	6
"	"	Magheraculmoney,	1	3
"	"	Templecarn,	1	8
"	Magherastephana,	Aghalurcher,	2	22
"	Tirkennedy,	Enniskillen,	1	8
	Total in Co. Fermanagh, ...		9	46

COUNTIES.	BARONIES.	PARISHES.	NO. OF MILLS.	NO. OF STOCKS.
Londonderry,	Coleraine,	Aghadowoy,	9	40
"	"	Agivey,	1	3
"	"	Desertoghill,	5	24
"	"	Dunboe,	7	20
"	"	Errigal,	3	12
"	"	Macosquin,	7	28
"	Keenaght,	Balteagh,	6	26
"	"	Banagher,	7	26
"	"	Boveragh,	4	16
"	"	Drumachose,	3	12
"	"	Dungiven,	4	18
"	"	Tamlaght, Finlagan,	3	13
"	Loughinsholin,	Auboe,	3	12
"	"	Ballynascreen,	4	16
"	"	Ballinderry,	5	22
"	"	Ballyscullin,	3	16
"	"	Derrylorren,	2	12
"	"	Desertlyn,	1	4
"	"	Desertmartin,	4	34
"	"	Kilcronaghan,	3	12
"	"	Killalagh,	5	20
"	"	Lissan,	4	22
"	"	Maghera,	12	43
"	"	Magherafelt,	4	28
"	"	Tamlaght-O'Crilly,	6	24
"	"	Termoneery,	2	18
"	N.E.Libts.of Coleraine,	Ballyaghvan,	1	4
"	"	Ballynashane,	1	24
"	"	Ballywillin,	1	8
"	"	Coleraine,	1	6
"	"	Kildollagh,	3	12
"	N.W. Libs. of L.Derry,	Templemore,	5	16
"	Tirkeeran,	Banagher,	3	10
"	"	Clondermot,	9	32
"	"	Lower Cumber,	1	4
"	"	Upper Cumber,	8	35
"	"	Faughanvoyle.	5	26
	Total in County Londonderry,	- -	155	698
Monaghan,	Cremorne,	Aughnamullan,	9	48
"	"	Ballybay,	2	9
"	"	Clontibret,	6	28
"	"	Muckno,	6	42
"	"	Tullycorbet,	1	4
"	Dartree,	Aghaboy,	1	5
"	"	Ematris,	1	10
"	"	Clones,	1	6
"	Farney,	Donaghmoyne,	2	14
"	Monaghan,	Clones,	1	4
"	"	Drumsnat,	1	4
"	"	Kilmore,	2	16
"	"	Monaghan,	1	12
"	"	Tedronet,	1	8
"	"	Tehallon,	3	16
"	Trough,	Donagh,	5	34
	Total in County Monaghan,	- - -	45	270

COUNTIES.	BARONIES.	PARISHES.	NO. OF MILLS.	NO. OF STOCKS.
Tyrone,	Clogher,	Clogher,	1	9
”	”	Donacavey,	2	12
”	Lower Dungannon,	Aghaloo,	4	32
”	”	Killeshill,	1	4
”	Middle Dungannon,	Clonfeacle,	7	36
”	”	Clonoe,	1	4
”	”	Donagheary,	3	12
”	”	Donaghmore,	4	18
”	”	Drumglass,	1	12
”	”	Killyman,	1	4
”	”	Pomeroy,	1	6
”	”	Tullyviskan,	1	6
”	Upper Dungannon,	Arboe,	1	4
”	”	Artrea,	1	8
”	”	Ballyclog,	2	8
”	”	Derryloran,	5	34
”	”	Desertcreat,	2	16
”	”	Kildress,	7	35
”	”	Tamlaght,	1	10
”	East Omagh,	Dromore,	2	6
”	”	Drumragh,	4	14
”	”	Termonmagurk,	1	4
”	West Omagh,	Ardstraw,	1	4
”	”	Longfield,	1	3
”	”	Termonmongan,	1	4
”	Lower Strabane.	Ardstraw,	26	116
”	”	Camus,	1	4
”	”	Donaghedy,	13	49
”	”	Leckpatrick,	4	17
”	”	Urney,	4	15
”	Upper Strabane,	Badoney,	1	4
”	”	Cappagh,	5	18
	Total in Co. Tyrone,	...	110	528
	Total in Ulster,...	... ...	926	4,722
Louth,	Ardee,	Dromin,	1	3
”	Lower Dundalk,	Ballymascanlan,	3	41
”	Upper Dundalk,	Dundalk,	1	4
”	Ferrard,	Dysart,	1	4
”	”	Dunleer,	1	14
	Total in Co. Louth,	... ...	7	66
Longford,	Rathcline,	Shrule,	1	8
Meath,	Fore,	Diamor,	1	4
”	Upper Kells,	Kells,	1	4
”	Lower Navan,	Donaghmore,	1	8
”	Upper Slane,	Collon,	1	10
	Total in Co. Meath,	... ...	4	26
Queen's,	Cullenagh,	Abbeyleix,	1	6
Westmeath,	West Kilkenny,	Noughaval,	1	4
”	Rathconrath,	Ballymore,	1	2
	Total in Co. Westmeath,	...	2	6

COUNTIES.	BARONIES.	PARISHES.	NO. OF MILLS.	NO. OF STOCKS.
Wexford,	Ballaghkeen,	Kilmakilloge,	1	6
„	Forth,	Rathaspick,	1	6
„	Scarawalsh,	Kilrush,	1	2
„	„	Templeshambo,	1	8
	Total in Co. Wexford, ...		4	22
	Total in Leinster,...		19	104
Cork,	Barrymore,	Carrigtohill,	1	6
„	„	Rathcormack,	1	9
„	East Carbery,	Ballymodan,	1	8
„	West Carbary,	Abbeystrowry,	1	5
„	„	Drimoleague,	1	3
„	Imokilly,	Middleton,	1	3
„	„	Trabolgan,	1	24
„	„	Youghal,	1	24
	Total in Co. Cork, ...		8	82
Limerick,	Clanwilliam,	St. Nicholas,	1	14
„	Coshlea,	Kilfinane,	1	20
	Total in Co. Limerick, ...		2	34
Tipperary,	Iffa and Offa West,	Whitechurch,	1	3
„	Ikerrin,	Barnane-ely,	1	6
„	„	Corbally,	1	8
„	Upper Ormond,	Nenagh,	1	7
	Total in Co. Tipperary, ...		4	24
Waterford,	Upper Third,	St. Mary's, Clonmel,	1	12
	Total in Province of Munster,...		15	152
Galway,	Town of Galway,	Rahoon,	1	6
Mayo,	Burrishoole,	Burrishoole,	1	8
Sligo,	Tireragh,	Castleconer,	1	10
„	„	Dromard,	1	2
„	„	Kilmacshalgan,	1	3
„	„	Kilmoremoy,	1	16
	Total in Co. Sligo, ...		4	31
	Total in Province of Connaught,...		6	45
	Total in Ireland, ...		956	5,053

II.

TABLE

SHOWING THE COMPARATIVE SIZE OF MILLS IN EACH COUNTY,

AND THE

PROPORTION OF THE NUMBER OF ACRES OF FLAX,

CULTIVATED IN 1853, TO EACH MILL.

	COUNTIES.	NUMBER OF MILLS.					Total.	Proportion of Mills to the No. of acres of flax.
		having 2 to 4 stocks.	having 5 to 6 stocks.	having 7 to 12 stocks.	having 13 to 18 stocks.	having above 18 stks.		
								1 Mill to every
ULSTER	Antrim	60	14	14	2	...	90	104
	Armagh	23	35	36	1	3	98	148
	Cavan	2	5	1	...	...	8	941
	Donegall	184	28	15	...	...	227	91
	Down	106	28	33	5	2	174	112
	Fermanagh	3	5	1	...	...	9	277
	Londonderry	120	18	16	...	1	155	110
	Monaghan	19	16	9	1	...	45	303
	Tyrone	77	20	12	1	...	110	172
	Total Ulster	594	169	123	10	6	916	125
LEINSTER.	Longford	...	...	1	...	..	1	659
	Louth	4	...	1	1	1	7	268
	Meath	2	...	2	...	...	4	178
	Queen's	...	1	...	...	...	1	64
	Westmeath	2	...	...	...	...	2	123
	Wexford	1	2	1	...	...	4	87
	Total Leinster	9	3	5	1	1	19	232
MUNSTER.	Cork	2	2	2	...	2	8	211
	Limerick	...	...	...	1	1	2	155
	Tipperary	1	1	2	...	...	4	95
	Waterford	...	...	1	...	...	1	197
	Total Munster	3	3	5	1	3	15	275
CONNAUGHT.	Galway	...	1	...	...	...	1	540
	Mayo	...	...	1	...	...	1	845
	Sligo	2	...	1	1	...	4	147
	Total Connaught	2	1	2	1	...	6	526
	Total Ireland	608	176	135	13	10	956	133

III.

TABLE

SHOWING THE PROPORTION OF STOCKS TO THE NO. OF ACRES GROWN IN 1852.

	COUNTIES.	No. of Mills.	No. of Stocks.	Pro. of Stocks to Acres of Flax.
				1 stock to every
ULSTER.	Antrim	90	432	21½
	Armagh	98	724	20
	Cavan	8	46	164
	Donegall	227	945	22
	Down	174	957	20½
	Fermanagh	9	48	52
	Londonderry	155	698	24¼
	Monaghan	45	270	50¾
	Tyrone	103	528	36
	Total Ulster	916	4648	26¾
LEINSTER.	Longford	1	8	82¾
	Louth	7	66	28½
	Meath	4	26	27¾
	Queen's	1	6	10¾
	Westmeath	2	6	41
	Wexford	4	22	15¾
	Total Leinster	19	134	33
MUNSTER.	Cork	8	82	20½
	Limerick	2	34	9
	Tipperary	4	24	15¾
	Waterford	1	12	14
	Total Munster	15	152	27
CONNAUGHT.	Galway	1	6	90
	Mayo	1	8	105½
	Sligo	4	31	19
	Total Connaught	6	45	70½
	Total Ireland	951	4979	27½

IV.

TABLE.

SHOWING THE KIND OF POWER EMPLOYED IN IRISH SCUTCH-MILLS, IN 1853.

	COUNTIES.	POWER EMPLOYED.				
		Water, only.	Steam, only.	Water and Steam.	Horses.	Wind.
ULSTER.	Antrim	77	2	2	9	...
	Armagh	88	8	1	1	...
	Cavan	8	...	...	...	...
	Donegall	227	...	...	...	...
	Down	132	15	1	1	25
	Fermanagh	9	...	...	...	...
	Londonderry	152	2	...	1	...
	Monaghan	39	5	...	1	...
	Tyrone	107	3	...	1	...
	Total Ulster	839	34	4	14	25
LEINSTER.	Longford	1	...	...	...	...
	Louth	4	3	...	...	...
	Meath	3	1	...	...	...
	Queen's	1	...	...	...	...
	Westmeath	...	2	...	...	...
	Wexford	4	...	...	...	...
	Total Leinster	13	6	...	...	...
MUNSTER.	Cork	5	3	...	...	...
	Limerick	1	1	...	...	...
	Tipperary	2	1	1	...	...
	Waterford	...	1	...	...	...
	Total Munster	8	6	1	...	...
CONNAUGHT.	Galway	1	...	...	...	...
	Mayo	1	...	...	...	...
	Sligo	3	1	...	...	...
	Total Connaught	5	1	...	...	...
	Total Ireland	865	47	5	14	25

A close analysis of these tables brings out some interesting features.

The ten parishes in which these are the greatest number of scutch-mills are as follows:—

	Parish.	Barony.	County.	No. of Mills.
1.	Ardstraw,	Lower Strabane,	Tyrone,	26
2.	Comber,	Lower Castlereagh,	Down,	21
3.	Donaghmore,	Raphoe,	Donegall,	20
4.	Taughboyne,	do.,	do.,	20
5.	Raymoghy,	do.,	do.,	17
6.	Allsaints,	do.,	do.,	14
7.	Raphoe,	do.,	do.,	13
8.	Donaghedy,	Lower Strabane,	Tyrone,	13
9.	Burt,	W. Innishowen,	Donegall,	13
10.	Maghera,	Loughinsholin,	Londonderry,	12

The Barony of Raphoe, Co. Donegall, contains by far the greatest number of scutch-mills of any barony in Ireland, there being 136 within its limits. That of Loughinsholin, Co. Derry, comes next, with 58 mills; Lower Strabane, Co. Tyrone, and Kilmacrenan, Co. Donegall, have each 48 mills; and Lower Iveagh, Co. Down, has 40 mills. The smallest number contained in any Ulster baronies are—Upper Belfast, Co. Antrim, Clonmahon, Co. Cavan, Dufferin, Co. Down, Tirkennedy and Clonkelly, Co. Fermanagh, which have each but one mill.

The number of mills is not always a criterion of their capacity of working, as their size varies very much, the Counties of Donegall, Derry and Tyrone having a large proportion with only 2 to 4 stocks in each, while Armagh, Down, and Antrim, have a large proportion with 7 to 18 stocks each.

Taken in this point of view, the ten parishes in which the greatest capabilities for mill-scutching exist, as shewn by the number of stocks in their mills, will be seen as follows :—

	Parish.	Barony.	County.	No. of Stocks.
1.	Ardstraw,	Lower Strabane,	Tyrone,	116
2.	Donaghmore,	Raphoe,	Donegall,	87
3.	Taughboyne,	do.,	do.,	87
4.	Loughgilly,	Lower Orier,	Armagh,	83
5.	Kilmore,	O'Neilland East,	do.,	82
6.	Newry,	Lordship of Newry,	Down,	80
7.	Killevy,	Upper Orier,	do.,	76
8.	Drumcree,	O'Neilland East,	do.,	70
9.	Tullyfern,	Kilmacrenan,	Donegall,	51
10.	Ballymore,	Lower Orier,	Armagh,	50

In the number of stocks, therefore, and capability of turning out work, the County Armagh takes the place which the County Donegal occupies, as regards the number of mills. But the barony of Raphoe still maintains its position, having, within its bounds, 553 stocks. Next in rank comes Loughinsholin, County Derry, with 283 stocks; Lower Iveagh, County Down, 243; Kilmacrenan, County Donegal, 227; Lower Strabane, County Tyrone, 201; O'Neilland West, County Armagh, 192; Lower Castlereagh, County Down, 177. The smallest number of stocks in any Ulster barony is in Lower Belfast, County Antrim, which has only 4; Clonmahon, County Cavan, Lecale and Dufferin, County Down, and Clonkelly, County Fermanagh, have each only 6 stocks.

The ten largest scutch-mills in Ireland are as follows :—

In County Armagh, Parish of Loughgilly, Townland of Killycairn,	1 with 26 stocks.
In do. Parish of Killevy, Townland of Cloghreagh,	1 each with 24 stocks.
In County Derry, Parish of Ballyrashane, townland of Kirkistran,	
In County Cork, at Trabolgan,	
In do. at Youghal,	
In County Down, Parish of Donaghcloney, Townland of Magherana	1 each with 20 stocks.
In County Armagh, Parish of Drumcree, Townland of Drumenagh	
In County Limerick, at Kilfinane,	
In County Down, Parish of Ardquin, Townland of Ballyheely,	1 with 18 stocks.
In County Monaghan, Parish of Muckno, Townland of Drumleck,	1 with 16 stocks.

THE BOKHARA CLOVER.

The following letter was received by the Committee with a package of the plant to which it refers :—

"Halifax, 23d August, 1853.

"DEAR SIR,—I take the liberty of addressing you on a subject which, I doubt not, will be interesting to the Royal Society for the Promotion of the Growth of Flax in Ireland; as it may be, in connexion with their laudable efforts, useful to the country, if not of considerable national importance.

Two years ago, from the pleasure I felt in reading your interesting Reports, I was trying some experiments in the growth of flax in my garden, and was led to try the product, in fibre, of various other plants around me. After repeated trials, I was astonished to find the great yield of the Bokhara Clover, which I repeated this season; but not having any means of properly treating the plant, either in the steeping or scutching, it seemed to me its economical value could be more satisfactorily tested by sending to your Society a small package of the plant, with the request that you would, at your convenience, hand it over to one of the numerous establishments of Schenck's system in Ireland, to be experimented upon.

"Last year I sent a few stalks of the Clover to a learned friend in London, with a request to ascertain and inform me if any notice of this plant, in relation to its fibre, suitable to textile fabrics, had been discovered or acted upon. He replied that, after repeated inquiries, all he could find was a paper on the plant, read before the Linnean Society of London by Professor Taylor, an extract of which he sent to me, and a copy of which I beg to hand you enclosed. The Bokhara Clover appears to require but little attention in its culture—is very hardy, with an astonishing rapid growth—it is biennial, and the second year, from the roots, will run up 8 to 10 feet high, in three or four ways. If it is found more desirable, it may be cut every month 15 to 18 inches in height. The branches yield the finest fibre, the stems the coarsest and strongest; its strength is quite equal, if not superior to flax. May not its culture, therefore, be of great importance?—at all events it is worth a trial alongside of a flax field, where establishments already exist for the rapid and improved production of the fibre, and if less value than the flax plant, still its large product (if true, as stated by Mr. Taylor, when tested), 60 cwt. instead of 5 cwt. of flax *to the acre*, may be, in view of the coarser fabrics, and cordage of great national importance, as well as private profit. I beg pardon for troubling you at such length, and will merely add, that I have directed the package of clover to your address, and to the care of our Clonmel friends, Messrs. Wm. Tarbett & Son, Liverpool, who will forward it to Belfast.—I remain, dear Sir, your obedient servant,

"WM. PRYOR.

"James MacAdam, Jun., Esq., Secretary Royal Flax Society, Belfast."

P.S.—In the package, please observe the small parcel is the growth of two months *from the seed*, the larger from the planting *of last year*, cut in the Autumn, and grown from the roots this year after Spring, of course, all Winter in the ground. It grows well, apparently, in all soils, with little care or attention. Its fragrance when dried or drying is beautiful. W. P.

A NOTE ON THE BOKHARA CLOVER BY WM. TAYLOR, ESQ., F.L.S.

"Mr. Taylor obtained from Mr. Sandon a sample parcel of seeds of the Bokhara Clover (*melilotus arborea*) which was sown early in April, 1839. The plant proved to be *biennial* and stood the Winter well. On the 28th April following, a part of the crop was cut down, the stems measuring fifteen inches in height, and on the 28th May, from the same piece of ground, a second crop was obtained, which had reached the height of 16 inches, a third on 28th June, 17 inches, a fourth in July, 16 inches, a fifth in August, 15 inches, and a sixth in September, 14 inches. According to Mr.

Taylor's calculation, the Bokhara Clover would yield from 20 to 30 tons of green herbage, and from 2 to 3 tons of strong fibre, (which appears capable of being manufactured into cordage) per acre. The flowers are white and very flagrant, and the plant does not appear to differ materially from the *melilotus leucanthe* although regarded by De Candolle as a distinct species."—*Proceedings of the Linnean Society of London, Vol. I.*, 1849.

The trials made of steeping this plant, in the same manner as flax, were very unsuccessful, as it appeared quite unaltered after the operation. The Committee have requested Mr. Pryor to supply them with some of the seed, for trial, and further attempts will be made to ascertain if the fibre can be rendered more easy of separation from the stem than by mechanical means.

NEW MACHINE
FOR
CLEANING THE TOW-WASTE
OF
SCUTCHING MILLS.

(Invented by Messrs. Calvert & Garnett, Cleckheaton, Yorkshire.)

In all scutching mills, a large quantity of waste is produced, consisting of portions of tow mixed with the *shoves* or woody dust detached from the fibre of the flax. A part of this, imperfectly cleaned, is usually separated, and sold under the name of "scutching tow," for coarse purposes, but the remainder has hitherto been totally worthless for any manufacturing uses, and is employed as *fuel*, although containing much fibre, as no means existed of cleansing it from the dirt. A very ingenious and effective machine has just been introduced by Messrs. M'Adam, Brothers, & Co., Soho Foundry, Belfast, which converts this hitherto valueless material into good saleable tow, worth from £10 per ton upwards. The machine requires about a horse power, and may be driven by a band from the shaft of a scutch-mill. The waste is spread loosely on a moving feeding-sheet, and is drawn in by rollers and thrown out at the opposite end of the machine, well opened and cleansed, presenting a very different appearance from that of the tangled and matted mass which entered the machine. No skill is required in the attendant, so that a woman or a boy is quite sufficient, and the machine will produce about 10 cwt. of cleaned tow in the day. It is not easy to form a correct estimate of the quantity of this material, which is annually burnt or thrown away in Ulster, but as there are upwards of 900 scutching mills at work, the amount thus lost must be very large indeed. At the annual meeting of the Flax Society, samples of the uncleaned waste, and of the same, after passing through the machine, were exhibited in the society's rooms, and excited great attention. The machine was also exhibited at work in the Soho Foundry.

ANNUAL BALANCE SHEET

OF THE

ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

Dr.

		£	s.	d.
1852.				
Oct. 31.—To balance on hands, ...		£ 277	16	8
1853.				
April 13.— "	Government grant for 1853, ...	1,000	0	0
Oct. 31.— "	Subscriptions to this date, ...	374	1	0
		£1,651	17	8

Cr.

		£	s.	d.	£	s.	d.
1853.							
Oct. 31.—By Office :—	Rent, Taxes, Fuel, Attendance, &c., ...				£55	5	10
—	" Printing and Advertising, ...				43	14	6
—	" Postage and Carriage of Parcels, ...				15	0	11
—	" Stationery, ...				"	17	4
—	" Sundries, not included in the foregoing items, ...				37	6	4
—	" Secretary's Salary and allowance for Clerk, ...				220	0	0
—	" Instructors' Salaries, in full or in part, viz. :—						
	Henry Haslett, ...	£45	3	0			
	W. J. O'Hara, ...	45	0	0			
	John De Cock, ...	42	18	3			
	Hugh M'Dowell, ...	38	2	6			
	James Orr, ...	36	11	9			
	John Grennan, ...	31	10	0			
	D. J. Boyle,...	31	5	0			
	Samuel Clarke, ...	28	17	6			
	Hugh Orr, ...	27	17	6			
	Wm. Smith,...	25	0	0			
	Wm. Anderson, ...	21	10	0			
	Isaac Irwin, ...	19	5	0			
	Samuel M'Cullough, ...	18	0	0			
	James M'Aree, ...	12	0	0			
	Andrew Melville, ...	8	15	0			
	J. B. William,...	4	5	0			
	Hugh Nelson,...	4	0	0			
	Samuel Kennedy, ...	3	3	10			
					443	4	4
	Carry forward, ...	£352	5	6	£615	9	3

1853.						
Brought forward, ...				£615	9	3
Oct. 31.—By Travelling Expenses, viz.:—						
Instructors	£459	8	6			
Deputations, and Secretary, ...	60	5	6			
				519	14	0
By Balance in Belfast Bank, ...	£211	6	1			
" Do. in Hands,...	105	8	4			
				316	14	5
				£1,651	17	8

JOHN CHARTERS, } AUDITORS.
JAMES CAMPBELL, }
JAMES MACADAM, JUN., SECRETARY.

SUPPLEMENT,

SHEWING THE RECEIPTS AND DISBURSEMENTS OF THE SOCIETY, FROM ITS FORMATION, 1ST MARCH, 1841, TO 31ST OCTOBER, 1853.

Dr.

RECEIPTS.

Subscriptions and Donations,	£8,760	5	3
Government Grants,	6,000	0	0
Repayments for Machinery.	249	6	2
Accidental Receipts,	33	0	11
	£15,042	12	4

Cr.

DISBURSEMENTS.

Instructors' Salaries and Travelling Expenses,	£10,001	12	3
Secretary's Salary,	1,915	0	0
Prizes awarded,	482	11	0
Machinery and Implements,	458	10	0
Printing and Advertising,	676	18	7
Office Rent, Taxes, Fuel, &c.,	404	7	6
Postage and Carriage,	189	17	5
Stationery,	88	18	0
Sundries, not included in the foregoing items,	508	3	2
	£14,725	17	11
Balance an hands, 31st Oct., 1853,	316	14	5
	£15,042	12	4

CONTRIBUTIONS TO SOCIETY'S FUNDS.

	1841 to 1852.			1853.		
HIS ROYAL HIGHNESS PRINCE ALBERT,	£25	0	0			
Abercorn, the Marquis of,	55	0	0	£5	0	0
Aberdeen, Gordon & Co., Montrose,	10	0	0			
Adair, A. Shafto, M.P., Ballymena,	45	0	0	5	0	0
Adair & Gunning, Cookstown,	30	17	0			
Agnew, James, Cairncastle Lodge, Larne,	25	0	0			
Ainsworth, H., Cleator, Whitehaven,	10	0	0			
Aitken, A. & M. J., Spalding, Lincolnshire				1	1	0
Alexander, Henry,	1	1	0			
Alexander, John, Millford, Carlow,	2	2	0			
Alexander, John, Newtonlimavady,	5	0	0			
Alexander, N., M.P., Portglenone,	31	6	0			
Algeo, Captain, Armagh,	5	5	0			
Allen, Dr. J.,	10	0	0			
Allen, John Read, Mount Panther, County Down,	5	0	0			
Allen, W.,	4	0	0			
Anderson, Henry, Ballinacree, County Antrim,	3	3	0	1	1	0
Andrews, J. & Sons, Comber,	20	10	0	1	1	0
Andrews, Michael, Ardoyne,	7	7	0	1	1	0
Annesley, Viscount, Castlewellan,	4	4	0			
Arbuckle, Lieutenant-Colonel, Donaghadee,	2	2	0			
Armstrong, William, Lurgan,	4	4	0			
Armstrong, W. Jones, Kippure Park, Blessington,	5	5	0			
Atkinson, Henry, Moy,	1	1	0			
Atkinson, W. S., Portadown,	1	1	0			
Aytoun, James, Kirkaldy,	2	0	0			
Bacon, Edward, Thorock-hall, Lincoln,	12	12	0			
Baker, Thomas, & Son, London,	2	0	0			
Balfour, Alexander, Kirkcaldy,	1	0	0			
Ballymahon Flax Committee, County Longford,	10	0	0			
Bandon Branch, County Cork,	20	0	0	10	0	0
Bangor, Viscouut,	8	0	0	2	0	0
Bankhead, J. B., Glenarm,	11	11	0			
Bantry Branch, County Cork,	10	0	0			
Barbour, William, Lisburn,	2	2	0			
Barcroft, J. & N., Stramore,	2	2	0			
Barklie, A. & G., Mullamore,	10	0	0			
Barklie, William, Armagh,	1	1	0			
Barnett, Thomas, & Co.,	1	1	0			
Barter, Dr., Blarney, County Cork,	2	2	0			
Barton, F. W., Clonally, Kish,	2	2	0			
Bates, John, Belfast,	10	10	0	1	1	0
Bateson, Sir R., Bart., Belvoir Park,	12	1	0	2	2	0
Bateson, Thomas, M.P., Derry,	2	2	0	1	1	0
Bath, Marquis of,	5	0	0			
Batt, Thomas, Purdysburn,	5	0	0			
Benttie, John, Portadown,	1	0	0			
Bells and Calvert, Whitehouse,	58	1	0	2	2	0
Bell, John, & Co., Whitehaven,	1	0	0			
Bell, J. & W. L., & Co., Ballyclare,	1	1	0			

	1841 to 1852.			1853.		
Bell, Thomas, & Co., Lurgan,	7	7	0	1	1	0
Bennett & Adams, Ballydevitt, County Derry,	4	4	0	1	1	0
Bennett, Thomas, Coleraine,	3	3	0			
Bennett, William, Ross, Herefordshire,	5	0	0			
Benyon & Co., Leeds,	10	0	0			
Beresford, J. B. Learmount, County Derry,	5	0	0			
Bernarn & Koch, Caegagh, County Dowh,	7	7	0			
Berry, Joseph, Moira,	1	1	0			
Besnard, Julius, Cork,	1	1	0			
Bessborough, Earl of,	10.	0	0			
Bianconi, C., C. Longford, Cashel,	10	0	0			
Bicknell, George, Kilrea,	6	6	0	1	1	0
Bigger, Lennox, Dundalk,	1	1	0			
Birch, J. Ballybeen, County Down,	10	0	0			
Birley, J-, & Sons, Kirkham. Lancashire,	155	0	0			
Birney, J., Lisburn,	5	5	0	1	1	0
Bishop Sterne's Charities,	0	0	0	3	0	0
Black, Henderson, Dromara,	2	2	0			
Black, H., Belfast,	1	1	0			
Blacker, W., Armagh,	1	1	0			
Blackwood, James, Strangford,	4	4	0			
Blackwood, William,	2	0	0			
Blakely, Rev. F., Moneyrea,	7	7	0	1	1	0
Blakely, T., M.D.,	1	0	0			
Bland, Rev. R., Whitehouse,	1	1	0			
Blundell, Francis, Navan,	18	14	80			
Boomer, J., & Co., Belfast,	28	11	0	5	0	0
Both, Sir R. Gore, Bart., M.P., Sligo,	1	1	0			
Borthwick, John, Kilroot,	9	9	0	1	1	0
Boyd, James, B., Ballier, Armagh,	2	2	0	2	2	0
Bouch, Joseph, London,	1	1	0			
Boyd, John, & Co., Belfast,	78	3	8			
Boyd, J. E. Letterkenny,	£2	2	0			
Boyd, Robert, Belfast,	1	0	0			
Boyle, Gill, & Co., Leeds,	4	2	£			
Brady, Captain R., Oaklands, Cookstown,	5	0	0			
Briggs, Thomas, Manchester,	1	0	0	£1	1	0
Bragdon, A., Manchester,				1		
Brooke, B. G. Moyaver, County Antrim,	3	3	0			
Brooke, Sir A. B., Bart., M.P., Brookborough,	15	0	0	5	0	0
Brooke, John, Bolton,	10	0	0			
Brown, H. & Nephews, Chester,				1	1	0
Brown, J. & Sons, Donacloney,	6	6	0			
Brown, J. & W. Dundee,	5	0	0			
Brown, R. Clayton, Carlow,	1	0	0			
Brown, Robert, Belfast,	5	0	0			
Brush, C. M., Dromore,,	1	1	0			
Bryan, Lieut.-Col., Jenkinstown, Kilkenny,	1	0	0			
Buckley, Henry, Hillsborough, Roscrea,	1	1	0			
Bucknall & Son, Liverpool,	1	1	0	1	1	0
Bucknall, H. W., Somersetshire,	1	1	0			
Buist, A. J., Dundee,	10	6	0			
Burgess, J. Y., Parkanour, Dungannon,	1	1	0			
Butler, Thomas, Kilkenny,	3	3	0			
" B." Birmingham,	1	1	0			
Cairns, H. M'C., M.P., London,				1	1	0
Cairnes, William, Drogheda,	2	0	0			
Caledon, Earl of	52	0	0	5	0	0
Camm, S. & Co., Manchester,	2	0	0			
Campbell, Henry, Belfast,	10	0	0			
Carlow Branch,	10	0	0			

	1841 to 1842			1853.		
Carty, Cairns, Rogers, & Co., Drogheda,	£5	0	0			
Cassidy, Robert, Magherafelt,	1	1	0			
Castlebridge Farming Society, Co. Waterford,	10	0	0			
Cather, David, Newtownlimavady,	1	0	0			
Caulfeild, Hon. Henry, Hockley, Armagh,	11	11	0			
Charlemont, Earl of,	43	0	0			
Charley, John, Finaghy, Dunmurry,	25	0	0			
Charley, J. & W., & Co., Seymore-hill,	12	12	0	2	2	0
Charley, Hill, Belfast,	1	1	0			
Charley, M., Woodburn,	3	3	0			
Charley, J. Stouppe, Arranmore,	1	1	0	1	1	0
Charters, John, & Co., Belfast,	10	0	0	5	0	0
Clancarty, Earl of,	7	7	0	1	1	0
Clarendon, Earl of,	10	0	0			
Clarke, G. J., Steeple, Antrim,	1	1	0	1	1	0
Clarke, R., Bailieborough,	1	0	0			
Clarke & Innes, Drogheda,	5	0	0			
Clements, Hon. C. S., M.P., Milford,	10	0	0	5	0	0
Clermont, Lord, Ravensdale, Connty Louth,	25	0	0	5	0	0
Clonbrock, Lord,	10	0	0			
Clonakilty Branch, County Cork,	10	0	0			
Close, Lieutenant-Colonel, Drumbanagher,	15	0	0			
Clothworkers' Company, London,	30	0	0			
Coates & Young, Belfast,	38	2	0	2	2	0
Coddington, H., Oldbridge, Meath,	1	0	0			
Corgy Mill Company, Doagh,	5	0	0			
Cole, Hon. John, Florence-Court,	1	0	0	1	0	0
Collum, John, Enniskillen,	1	1	0			
Conolly, Thomas, M.P., Cliff, Ballyshannon,	15	0	0	5	0	0
Cohyngham, W. L., Cookstown,	1	0	0			
Cook, William, London,	20	0	0			
Cooper, E. J., Markee Castle, Sligo,	1	1	0			
Cootehill Branch,	15	0	0			
Cope, A. W., Drumilly, Loughgall,	5	0	0			
Cope, R., Manor House, Loughgall,	2	2	0	1	1	0
Coulson, Brothers, Lisburn,	13	3	3			
Coulson, James, Lisburn,	3	3	0	1	1	0
Coulter, Richard, Newry,	1	1	0			
Courtown, the Earl of,	20	0	0			
Cowan, W., & Co., Whiteabbey,	20	4	0			
Crace, H., Belfast,	1	1	0			
Craig, A. W., Belfast,	13	3	0			
Cramsie, John, Belfast,	8	8	0			
Crawford, J. S., Crawfordsburn,	5	5	0	1	1	0
Crawford, W. S., Crawfordsburn,	41	0	0	2	2	0
Crawford & Lindsays, Banbridge,	4	4	0			
Cremorne, Lord,	25	0	9			
Crichton, Hon. Colonel, Crom Castle,	4	4	0			
Crosbie, W. T., Ardfert Abbey, Tralee,	1	1	0			
Cuppage, J. & Co., Lurgan,	34	9	1	1	1	0
Curell, J. &. D., Belfast,	25	0	0			
Curtis. Patrick, Dublin,	2	2	0			
Dargan, William, Dublin,	50	9	0			
Darley, Rev. J., Dungrnuon,	1	0	0			
Davison, A. & J., Broughshane,	32	3	0	2	2	0
Davison, Richard, M.P., Belfast,	1	1	0	1	1	0
Dowson, Rev. J. M., Tipperary,	4	4	0			
Denison, R., Pocklington, Yorkshire,	1	1	0	1	1	0
De Ros, Lord, Strangford,	7	5	0	2	0	0
De Ros, Lady, Strangford,	2	0	0			
Derry, the Lord Bishop of,	10	0	0			

	1841 to 1852.			1853.		
De Salis, the Count, Tandragee,	£26	1	0			
Despard, Mrs., Queen's County,	1	0	0			
De Vere, Sir Vere, Bart., Curragh-chase, Adare,	2	2	0			
De Vesci, Viscount,	30	0	0			
Devonshire, the Duke of,	5	0	0			
Dewhurst, J. & Co., Preston,	2	2	0			
Dobbin, Leonard, Armagh,	1	1	0			
Donegall, the Marquis of,	5	0	0			
Douglas, Charles, Gracehall, Lurgan,	5	0	0			
Down, the Lord Bishop of,	12	12	0	3	3	0
Downshire, late Marquis of,	55	0	0			
Downshire, present Marquis of,	345	0	0	25	0	0
Doyne, Charles J., Wells, County Wicklow,	1	1	0			
Drapers' Company, London,	25	0	0	5	0	0
Drogheda Branch,	25	0	0			
Dromore, the Very Rev. the Dean of,	2	2	0			
Druitt, Thomas, Donacloney,	2	2	0			
Duff, Admiral, Elgin,	2	2	0			
Dufferin, Dowager Lady, Clifton,	15	0	0			
Dufferin and Claneboye, Lord,	9	2	0	2	0	0
Duffin, C., & Co., Belfast,	6	6	0			
Dunbar, M'Master, & Co., Gilford,	172	18	0			
Dungannon, Viscount,	15	0	0	5	0	0
Dunmanway Branch, County Cork,	10	0	0			
Dunmurry Spinning Company,	8	8	0	2	2	4
Durham, A., Belvidere, County Antrim,	2	2	0			
East Mill Company, Brechin,	2	0	0			
Edward, A & D., & Co., Dundee,	5	0	0			
Enniskillen, Earl of,	12	0	0	4	0	0
Erne, Earl of,	55	0	0	5	0	0
Evans, T. K., Armagh,	1	0	0			
Ewart, W., & Son, Belfast,	27	2	0	2	2	0
Falls Mill Company,	148	11	0			
Fane, Cecil, Willey Hall, Shropshire,	1	1	0	1	1	0
Farmer, Sir G. R., Bart., Bideford, Devon,	1	1	0			
Ferguson, J. F., Belfast,	9	4	0			
Ferguson, J. S., & Co., Belfast,	27	2	0			
Ferguson, Sir R. A., Bart., M.P., Derry,	10	0	0			
Ferguson, T., & Sons, Whiterock.	2	2	0			
Fethard Flax Society, Co. Tipperary,	10	0	0			
Filgate, W., Co.. Louth,	1	1	0			
Filgate, F., Hillsborough,	3	3	0	1	1	0
Fisher, John, & Co., Belfast,	14	7	0			
Fishmongers' Company, London,	45	15	0	5	0	0
Fitzpatrick, Right Hon. J. W., M.P.,	10	0	0			
Fitzpatrick, R. W., Granston Manor,	10	0	0			
Fletcher, Alexander, & Co., Glasgow,	73	15	0	2	2	0
Foott, H. B., Carrigacuna Castle, Cork,	1	1	0			
Forsythe & Orr, Belfast,	47	6	0			
Foster, R. Springfield, Dungannon,	2	2	0			
Gailey, Daniel, Coleraine,	1	1	0			
Galmoy Farming Society, Co. Kilkenny,	15	0	0			
Gamble, J. & W., Carrickfergus,	6	1	0			
Gartland, T. M'E., Carrickmacross,	1	1	0			
Gascoyne, Misses, Kilfinane, Co. Limerick,	10	0	0			
German, Petty, & Company, Preston,	115	0	0			
Gervais, Rev. F., Cecil, Augher,	3	3	0			
Gibson, James, Belfast,	3	3	0	1	1	0
Gihon, William, & Sons, Ballymena,	7	7	0	1	1	0

	1841 to 1852.			1853.		
Given, A. Newtownlimavady,	£23	18	0			
Gladstone, John, London,	5	0	0			
Glasgow & Wood, Cookstown,	1	1	0			
Glendinning, H. Portadown,	1	1	0			
Goddard, James, Belfast,	6	1	0			
Gordon, R. F., Craigdarragh, Co. Down,	3	3	0	£1	1	0
Gore, Col. A. K., Beleek Manor, Ballina,	2	2	0			
Gore, R., Ormsby, Mayo,	1	1	0			
Gosford, Lord,	20	0	0			
Græme, Major, Crieff, Perthshire,	2	2	0	1	1	0
Gradwell, Chadwick, & Co., Drogheda,	67	10	0	5	0	0
Graham, William, Lisburn,	1	0	0			
Grandison, Thomas, Orisaba, Mexico,	1	1	0			
Gray, William, & Sons, Whitehouse,	10	0	0			
Green, James, & Co. Keady,	18	7	4			
Greer, George, Lurgan,	12	12	0	1	1	0
Greer, James,	3	3	0	1	1	0
Greg, Thomas, Ballymenoch,	3	3	0			
Grehan, P., Mountplunkett, Athlone,				1	1	0
Greville, Algernon,	1	1	0			
Grimshaw, Edmund, Mossley,	73	0	0	2	0	0
Grimshaw, James, & Sons, Whitehouse,	92	12	6	5	0	0
Gunning & Campbell, Belfast,	3	3	0	1	1	0
Gunning & Quarrell, London,	2	0	0			
Hall, Roger, Narrowwater Castle, Newry,	43	16	0	2	2	0
Hancock, John, Lurgan,	11	11	0	1	1	0
Hancock, Professor, Belfast,	3	3	0			
Harden, James, Harrybrook, Co. Armagh,	1	1	0			
Hardy, C.,	5	0	0			
Hardy, J.,	1	1	0			
Harris, J. Porter, Ashfort, Tynan,	1	1	0			
Harrison, John, Mertoun, Belfast,	2	2	0	£1	1	0
Hawkshaw, Lieut.-Colonel, Blaris Lodge,	2	2	0			
Hay, Brothers, & Co., Dunleer,	1	1	0			
Hayes, F. W., Seapatrick, Banbridge,	4	12	0			
Hayes, Richard, Millmount, Banbridge,	2	2	0			
Hemphill, Hunter, & Co., Greenfield, Coleraine,	18	18	0			
Henderson, Mr.,	1	0	0			
Henry, J. & W., Kirkcaldy,	1	0	0			
Henning, John, Waringstown,	22	17	0	2	2	0
Henry, George, Tassagh, Keady,	2	2	0			
Herdman, J. & J., & Co., Belfast,	104	16	0	5	0	0
Herdmans & Co., Strabane,	6	5	0			
Heron, Hugh, Banbridge,	1	0	0			
Hertford, late Marquis of,	100	0	0			
Hertford, present Marquis of,	200	0	0	25	0	0
Heuze, M., Landerneau, France,	1	0	0			
Hewitt, Hon. and Rev. J. P.,	1	0	0			
Heyland, Langford, Portglenone,	1	1	0	1	1	0
Heyn, Gustavus, Belfast,	5	5	0	1	1	0
Heytesbury, Lord,	10	0	0			
Higginson, Henry, Leeds,	1	0	0			
Higginson, Wm., Leeds,	1	1	0			
Hill, Lord George A., Gweedore,	6	1	0			
Hill, Lord A. Edwin, M.P.,	15	0	0	5	0	0
Hillsborough, Earl of,	2	0	0			
Hinckaman, Furness, & Co., Preston,	70	0	0			
Hind, John, & Sons, Belfast,	10	0	0	5	0	0
Hives & Atkinson, Leeds,	40	0	0			
Houston, R. B. B., Orangefield,	26	16	0	2	2	0
Hudson, William, Mount-Caulfield, Newry,	2	0	0			

	1841 to 1852.			1853.		
Hull, Wilson, & Co., Belfast,	£37	19	0			
Hull, Hart, & Co.,	4	4	0			
Hunter & M'Kisack, Belfast,	1	1	0			
Hurst, C.,	1	1	0			
Hutchinson, John, Tandragee,	1	1	0			
Idrone Farming Society, County Carlow,	10	0	0			
Inistioge Farming Society, County Kilkenny,	10	0	0			
Irish Society, the Hon., London,	65	0	0	10	0	0
Ironmongers' Company, London,	15	0	0	5	0	0
Irwin, Crommelin, Newgrove, Belfast,	1	1	0			
Irwin, J. R., Carnagh, Keady,	2	2	0			
Jackson, F., Roscrea,	1	1	0			
Jackson, J. K.,	1	1	0			
Jackson, Thomas, Workington,	1	1	0			
Jackson, Thomas, Belfast,	2	2	0			
Jackson, William,	1	0	0			
Jaffe, Brothers, Hamburgh,	1	0	0			
Jamieson, Henry, Clonmel,	1	0	0			
Jennings, Francis M., Cork,				1	1	0
Jobling, E., Carlisle,	2	2	0			
Johnson, John, Moy,	1	1	0			
Johnston, Joseph, Knappagh, Armagh,	1	1	0			
Jones, John, Templeranney, Arklow,	1	1	0			
Jones, Lewis, G., Wood-hill, Dromore West,	1	1	0			
Jones, Miss, Kilwaughter-Castle, Larne,	2	0	0			
Jones, Major, Drumard, County Leitrim,	1	1	0			
Kavanagh, Lady Harriet, Kilkenny,	1	0	0			
Kavenagh, J. B., Newtownlimavady,	1	1	0			
Kay, James, & Son, Manchester,	57	10	0			
Kempson, William, Broomyard, England,	2	2	0			
Kennedy, James, & Sons, Belfast,	25	18	0	2	2	0
Ker, David S., M.P., Montalto, County, Down,	10	0	0			
Kilkenny Branch,	10	0	0			
King, Henry, Dungiven,	2	2	0			
King, James,	1	1	0			
King, Michael,	1	0	0			
Kingston, A. C., Longford,	1	1	0			
Kinmond, Peter, Dundee,	1	0	0			
Kinmond & Hill, Dundee,	1	0	0			
Kirk, William, M.P., Keady,	4	2	0			
Kirkpatrick, Dr., Dublin,	4	4	0	1	1	0
Kirwan, Denis, Castlehacket, Tuam,	4	4	0	1	1	0
Knox, J. & W., Kilburnie, Ayr,	1	0	0			
Knox, M. W., Arthurstown, Wexford,	1	1	0	1	1	0
Kreuter, Francois, Vienna,				1	1	0
Lalor, Patrick,	1	1	0			
Lancey, Captain, Newtonlimavady,	1	0	0			
Landall, D., & Co., Kirkcaldy,	2	2	0			
Lansdowne, Marquis of,	10	0	0			
Larne Farming Society,	10	0	0			
Lascelles, Rev. R. P.,	1	1	0			
Law, Samuel, Banbridge,	29	12	0			
Leadbetter, J. & Co., Belfast,	6	6	0	2	2	0
Leadbetter, Adamson, & Co., Blairgowrie,	2	0	0			
Leathem, J. & W., Derry,	5	0	0			
Lee & M'Kinstry, Armagh,	1	1	0			
Ledlie, George, Cogry,	1	1	0			
Le Hunte, George, Astramont, Wexford,	1	1	0	1	1	0

	1841 to 1852.			1853.		
Leinster, Duke of,	£30	0	0			
Leslie, C. P., M.P., Glasslough,	45	0	0			
Leslie, Edmund, Donaghadee,	3	3	0			
Leslie, Rev. E., Annahilt,	4	0	0			
Leslie, William, Donaghadee,	1	1	0			
Lewis, A. G., Monaghan,	1	1	0			
Limerick Agricultural and Flax Society,	10	0	0			
Lindsay, D., Ashfield, Dromore,	8	8	0	1	1	0
Littledale, A. H. Bolton-Hall, Lancashire,	1	1	0			
Lloyd, R.,	1	1	0			
Local Agricultural Fund,	100	0	0			
Londonderry Farming Society,	15	0	0			
Londonderry, Marquis of,	30	0	0			
Louth Farming Society,	15	0	0			
Lowry, Joseph, Belfast,	2	2	0			
Lawson, Andrew, Arbroath,	4	0	0			
Lucan, Earl of, Castlebar,	15	0	0			
Lucas, Right Hon. E., M.P.,	1	1	0			
Lucas, F., M.P., Dublin,	3	3	0			
Ludolf, H., Leeds,	2	2	0	1	1	0
Lurgan, late Lord,	145	0	0			
Lurgan, present Lord,	10	0	0	10	0	0
Lyle, James, Knocktarna, Co. Derry,	...			1	1	0
Magill, S. R. Cookstown,	3	1	0			
Mahoney, Rev. Denis, Kenmare,	5	0	0			
Malcolm, A. G. Kirkcaldy,	1	1	0			
Malcolm, James, Lurgan,	7	7	0			
Mann, A. & Son, Arbroath,	4	2	0			
Marley, Gabriel, London,	1	0	0			
Marshall & Co., Leeds,	225	0	0			
Marshall & Co., Patrington,	2	2	0	2	2	0
Martin, John, jun., Killileagh,	40	6	0	2	2	0
Massareene, Viscount,	3	0	0	3	0	0
Matthew, John, Rathcloheen, Cashel,	1	1	0			
Matthew, Very Rev. T. Cork,	2	2	0			
Maxwell, J. W., Finnebrogue, Co. Down,	10	10	0			
Maxwell, R. P., Groomsport, Co. Down,	3	3	0	1	1	0
Mayo, Earl of,	5	0	0			
Meade, Hon. General, London,	35	0	0			
Mell Mill Company, Drogheda,	14	6	3			
Mercers' Company, London,	85	0	0	5	0	0
Metcalf, J. & G., Pateley-Bridge, Ripon,	2	2	0			
Middleton Union Farming Society, Co. Cork,	15	0	0			
Millar, Alexander, Ballycastle,	1	1	0			
Millar, Rowley, Moneymore,	1	1	0			
Milne, Cruden, & Co., Aberdeen,	25	0	0			
Molony, James, Kiltanon, Co. Clare,	2	2	0			
Monaghan Branch,	15	0	0			
Monkstown Spinning Company, Whitehouse,	38	0	0	2	2	0
Monsell, Wm., M.P., Tervoe, Limerick,	2	0	0			
Monteagle, Lord,	10	0	0			
Moore, Henry, Barne, Co. Carlow,	1	0	0			
Moore, James, Moorefort, Co. Antrim,	3	0	0			
Moore, J. S., Ballydivity, Co. Antrim,	5	0	0			
Moore, Samson, Ballynacree, Co. Antrim,	5	0	0			
Morfit, John, Leeds,	24	3	0			
Mortimer, R., Carrick-on-Shannon,	1	1	0			
Mulhollands, Belfast,	100	0	0			
Mulholland, A. & Son, Belfast,	166	13	0			
Mulholland, S. K., & Hinds, Belfast,	149	6	0			
Mulholland, William, Belfast,	2	10	0			
Munn, John, jun., Londonderry,	20	0	0			

	1841 to 1852.			1853.		
Murdoch, William, Monaghan,	1	1	0			
Murland, James, Castlewellan,	95	0	0			
Murphy, John, & Co., Linfield, Belfast,	17	10	0			
MacAdam, Brothers, & Co., Belfast,	15	10	0	2	2	0
Macart, Dr., Dromore,	2	2	0			
Macartney, G., M.P., Lissanoure-Castle,	26	1	0			
Macauley, Patrick, Randalstown,	23	9	0			
M‘Cartan, J., Waringstown,	7	7	0	1	1	0
M‘Causland, M., Newtownlimavady,	5	0	0			
M‘Clelland, James, Banville,	4	4	0			
M‘Clelland, William, Dromore,	6	6	0	1	1	0
M‘Clintock, H. Stanley, Randalstown,	1	1	0	1	1	0
M‘Clure, Thomas, Belfast,	2	2	0	2	2	0
M‘Connell & Kennedy, Belfast,	2	2	0	2	2	0
M‘Donald, A., & Co., Kirkcaldy,	1	1	0			
M‘Donnell, E., Glenarm-Castle,	12	8	0			
M‘Gaw, William,	1	0	0			
M‘Gildowney, J., Ballycastle,	1	0	0			
Mackay, James,	1	1	0			
M‘Kean, Henry, Keady,	1	1	0			
M‘Kee, John, Keady,	1	0	0			
M‘Kenzie, Alexander,	1	1	0			
M‘Kibbin, R., M.D., Ballymacarrett,	31	0	0			
M‘Kinstry, Lee, Armagh,	1	1	0			
M‘Murray, G., & Co., Waringstown,	2	10	0			
M‘Murray, Thomas, & Co., Dromore,	18	4	0	2	2	0
M‘Naghten, Sir E. C. W., Bart, Bushmills,	2	2	0			
M‘Naghten, Sir F. W., Bart., Bushmills,	12	10	0			
M‘Naghten, B., Ballyboggy, Coleraine,	11	11	0			
M‘Neece, Rev. F.,	1	1	0			
M‘Neill, J., Parkmount, Belfast,	13	8	0	1	1	0
Macoun, John, Kilmore,	1	0	0			
M‘Peake, W., Ballymena,	1	1	0			
M‘Watty, James, Castleblaney,	1	1	0			
Nelson, John, & Co., Selby,	1	0	0	1	0	0
Nenagh Agricultural Society,	10	0	0			
Nesbitt, John, London,	7	2	0			
Newry & Mourne, Viscount, M.P.,	26	5	0			
Newton, P. J., Dunleckney, Carlow,	2	0	0			
Nicholson, George, Donacloney,	1	1	0			
Nicholson, John, New York,	5	9	0	1	1	0
Nicholson, Joseph,	2	2	0			
Nicholson, R., Donacloney,	1	1	0			
Nicholson, William, Donacloney,	1	1	0			
Niven, Richard, Chrome-hill,	12	12	0	1	1	0
Norris, John, Camowen, Omagh,	4	4	0	1	1	0
Norrie, C., & Sons, Dundee,	1	1	0			
Nugent, Colonel, Portaferry,	15	0	0			
O'Brien, W. S., M.P., Cahirmoyle,	1	1	0			
Ogilby, Sir J., Bart, Baldovan, Perthshire,	1	0	0			
Oliver, W., Spring Lodge, Kilfinane,	1	0	0			
O'Neil, Viscount,	5	0	0	5	0	0
Orr, Andrew,	1	1	0			
Orr, William, & Sons, Glenalina,	1	1	0			
Overend, J., & Co., Darlington,	1	1	0			
Palmerston, Viscount,	1	1	0			
Parker, Preston, & Co., Belfast,	5	0	0			
Paton, J. & G., Montrose,	10	5	0			

	1841 to 1852.				1853.		
Patrick, J., & Sons, Ballymena,	6	6	0	...	1	1	0
Patton, William, Armagh,	1	1	0				
Peel, Right Hon. Sir Robert, Bart.,	25	0	0				
Perceval, Spencer, Finnebrogue, County Down,	2	2	0	...	1	1	0
Phibbs, William, Seafield, Sligo,	1	1	0				
Pike, Jonathan, Coalisland,	1	0	0				
Pirrie, William, Belfast,	1	1	0				
Porter, H. J., Tandragee,	2	2	0				
Porter, Rev. J. G., Lisbellaw, Enniskillen,	2	2	0	...	1	1	0
Porter, J. G. V., Kilskerry, Trillick,	1	0	0	...	1	1	0
Powerscourt, Representatives of Viscount,	30	0	0	...	5	0	0
Pownall, C. J., Wilton, County Wexford,					1	1	0
Praeger, John, Belfast,	1	1	0	...	1	1	0
Prentice, H. L., Caledon,	11	11	0	...	1	1	0
Preston, John, & Co.. Belfast,	9	4	0	...	1	1	0
Price, James, Saintfield,	11	11	0	...	1	1	0
Price, Nicholas, Saintfield,	20	0	0				
Price, Sir Charles, & Co., London,	10	0	0				
Primate, The Lord,	26	0	0	...	3	0	0
Provincial Bank of Ireland,	20	0	0				
Quarrell, Francis, London,	1	1	0				
Quinn, James, Dromore-house,	1	1	0				
Quinn, James Henry, Newry,	1	1	0				
Quinn, Peter, Dromore-house,	1	1	0				
Ram, Stephen, Ramsfort, Wexford,	1	1	0				
Ranfurley, Earl of,	47	0	0	...	5	0	0
Reilly, J. T., Scarva, Loughbrickland,	9	7	0	...	1	1	0
Renny, Sons, & Co., Arbroath,	8	8	0	...	1	1	0
Renshaw, W., & Co., Manchester,	12	12	0				
Richards & Co., Aberdeen,	25	10	0				
Richardson, Brothers, & Co., Belfast,	77	12	0	...	2	2	0
Richardson & Co., Lambeg,	66	10	0	...	5	0	0
Richardson, H., Somerset, Coleraine,	12	11	0				
Richardson, Miss J., Richhill,	26	14	0	...	2	0	0
Richardson, J. G., Newry,	2	2	0				
Richardson, J. & T., & Co., Springfield,	10	8	0	...	1	1	0
Richardson, Samuel, & Co., Lisburn,	30	0	0				
Richardson, J. J., M.P., Lisburn,	10	10	0	...	2	2	0
Richardson, J. N., Sons, & Owden, Belfast,	107	10	0	...	5	0	0
Riverstown Flax Society, Co. Cork,					10	0	0
Roberts, John, Collin, Lisburn,	5	5	0	...	1	1	0
Robinson, George, Drimoleague, County Cork,	1	1	0				
Roche, E. B., M.P., County Cork,	5	0	0				
Roddy, Robert, Belfast,	6	6	0	...	1	1	0
Roden, Earl of,	10	0	0				
Rollo, R., Moyfort, Ballina,	2	2	0				
Rome, Joseph, Carlisle,	2	2	0	...	1	1	0
Roscrea Branch,	10	0	0				
Ross, D. R., M.P., Rosstrevor,	10	0	0				
Rossmore, Lord,	5	0	0				
Rowan, Major, Merville,	22	6	0				
Rushout, the Hon. Captain, M.P., Worcester,	1	1	0				
Rutherford & Co., Dunfermline,	2	2	0				
Russell, James, Dunlewey, County Donegal,	2	2	0				
Russell, Matthew, Newry,	1	1	0				
Sadler, Fenton, & Co., Belfast,	12	10	0	...	2	2	0
Sadler, S. & Co., London,	2	0	0				
St. Leger, Hon. A. B., Adare, Limerick,	2	0	0				
Salters' Company, London,	10	10	0				

	1841 to 1852.			1853		
Saunders, Miss, Fortgranite, Baltinglass,	1	1	0			
Saunders, R. F., Baltinglass,	1	0	0			
Savage, John, Belfast,	3	3	0	1	1	0
Scott, Major, Willsbro', Derry,	1	1	0			
Seaver, Captain J., Heath-Hall, Newry,	5	0	0			
Shaw, Edward, & Co., Belfast,	24	2	0			
Shaw & Houghton, Celbridge,	62	10	0			
Shaw, Joseph, Templemills, Celbridge,	27	10	0			
Shaw, William,	15	0	0			
Shirley, Evelyn, J., M.P., Lough Fea,	5	0	0	5	0	0
Shuldham, Lieutenant-General, Dunmanway,	2	2	0			
Shouldham, John, Ballymahon,	2	2	0	1	1	0
Simms, William, Belfast,	5	5	0	1	1	0
Simpson, John,	1	0	0			
Skibbereen Branch, Co. Cork,	15	0	0			
Skinner, C. G. M'G., Malone,	4	4	0	1	1	0
Sligo Branch,	10	10	0			
Sligo, Marquis of,	10	0	0			
Smyth, John, & Co., Banbridge,	27	2	0			
Smyth, Ralph, Drogheda,	1	0	0			
Spencer, Lawrence, & Co., Preston,	2	2	0			
Sproule, John, Dublin,	1	0	0			
Staples, Edmund, Queen's County,	1	1	0			
Staples, Sir T., Bart., Lissan, Co. Tyrone,	5	0	0			
Stevenson, J. & W., Roan Mills, Dungannon,	6	5	0			
Stewart & M'Clelland, Ligoneil,	99	19	2			
Stewart & Savage, Lisburn,	22	10	0			
Stewart, R., & Sons, do.,	15	9	0	1	1	0
Storar, Thomas, & Co., London,	14	10	0	2	2	0
Stoney, Isaac, Gilford,	1	0	0			
Story A., Carrick, Co. Fermanagh,	1	0	0			
Stradbally Flax Society, Queen's Co.,	10	0	0			
Straker, William, London,	1	1	0			
Stringer, Captain, Tynan,	1	0	0			
Stronge, Sir J. M., Bart, Tynan-Abbey, Armagh,	21	0	0	2	2	0
Sturrock, John, Dundee,	1	1	0	1	1	0
Stuart de Decies, Lord,	5	0	0			
Sullivan, John, Kinsale,	1	0	0			
Swan, P. D., Kirkcaldy,	2	0	0			
Symes, John, Ballina,	3	3	0			
Taylor, Hon. and Rev. E., Ardgillan,	5	0	0			
Templeton, Viscount	70	0	0			
Tennent, R. J., M P., Belfast	7	7	0	1	1	0
Tennent, J. Thompson, Belfast,	9	5	0			
Tenison, E. K., M.P., Kilronan-Castle	1	1	0			
Tenison, Lady Louisa, Kilronan-Castle,	1	1	0			
Thompson, John, Lowwood, Belfast,	2	2	0			
Thompson, R. & Co., Wolf-hill,	98	15	0			
Tirkeeran Farming Society, Co. Derry	15	0	0			
Tottenham, Rev. R. L., Carrickmacross,	3	3	0			
Townsend, S. R., Skibbereen,	1	0	0			
Trail, W., Ballylough, Bushmills,	5	4	0			
Trinity College, Dublin,	10	0	0			
Trower, E. Spencer, Herts,	2	2	0	1	1	0
Tullamore Branch, County Westmeath,	10	0	0			
Verner, Sir W., Bart, M.P., Churchhill, Moy,	55	0	0	5	0	0
Vesey, S., Derrabard, Fintona,	2	2	0			
Wade, R. C, Clonebrany, County Meath,				1	1	0
Waithman & Co., Yealand, Lancashire,	5	0	0			

	1841 to 1852.			1853.		
Walker, Mark, Leeds,	4	4	0			
Walker, R. & S., Tullygirvan,	14	12	0	1	0	0
Walker, W., Carrickfergus,	15	0	0			
Walkington, Thomas, Ballinderry,	1	1	0	1	1	0
Waller, Dr., Pallaskenry, Limerick,	2	0	0			
Wandesford, J. B., Castlecomer,	1	0	0			
Waring, Major, Waringstown,	2	2	0	1	1	0
Waring, Richard, Newry,	1	1	0			
Warne, H. & Son, Scole, Norfolk,	1	1	0	1	1	0
Warren, J. C. B., Horkesley-Hall, Essex,	2	0	0			
Waterford Flax Society,	10	0	0			
Waterford, Marquis of,	65	0	0	5	0	0
Watkins, J. G., Woodfield, Stourport,	3	3	0			
Watson, James, Brookhill,	16	16	0			
Watson, R., & Sons, Lurgan,	6	6	0	1	1	0
Watson, William, New York,	2	0	0			
Watts, Samuel,	1	0	0			
Waugh, Miss,	1	1	0			
Waugh, Henry, Banbridge,	1	1	0			
Wexford Union Agricultural Society,	10	0	0			
White, W., Newton-Lodge, Sligo,	1	1	0			
Wiggins, Henry, Muff, County Derry,	6	0	0			
Wilkinson & Co., Leeds,	42	2	0			
Wilks, J., London,	2	0	0			
Willis, H. H., & Co., London,	1	1	0			
Wilson, J. & R., Derry,	2	2	0	1	1	0
Wilson, J., & Sons, Whitehaven,	1	1	0			
Wilson, D. J., Belvoir, County Clare,	1	1	0			
Wittkowsky, Querfeldt, & Co., Riga,	5	0	0			
Wolsey, John, Portadown,	1	0	0			
Woods, Charles, Moy,	1	1	0			
Wynne, Rt. Hon. John, Hazlewood, Sligo,	2	0	0			
Young, J., & Co., Ballymena,	5	5	0	1	1	0
York-Street Flax-Spinning Company, Belfast,	10	0	0	10	0	0

PRINTED AT THE "BELFAST MERCURY" OFFICE.

X8. E. 15.

THE FOURTEENTH
ANNUAL REPORT AND TRANSACTIONS
OF THE
ROYAL SOCIETY
FOR
THE PROMOTION AND IMPROVEMENT
OF THE
GROWTH OF FLAX IN IRELAND;

PARSONS LIBRARY, University of Michigan

WITH AN APPENDIX,
TREASURER'S STATEMENT OF ACCOUNTS,
AND
LIST OF SUBSCRIPTIONS AND DONATIONS,
FOR THE YEAR ENDING 31st OCTOBER, 1854.

BELFAST:
PRINTED AT "THE DAILY MERCURY" OFFICE.
WINECELLAR-ENTRY.
1854.

9

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FOR THE YEAR ENDING 31st OCTOBER, 1854.

BELFAST:
PRINTED AT "THE DAILY MERCURY" OFFICE.
WINECELLAR-ENTRY.

1854.

LIST OF OFFICE-BEARERS.

Patrons:

HER MOST GRACIOUS MAJESTY THE QUEEN.
HIS ROYAL HIGHNESS THE PRINCE ALBERT.

Vice-Patrons:

HIS EXCELLENCY THE EARL OF ST. GERMANS, LORD LIEUTENANT OF IRELAND.

THE RIGHT HONOURABLE THE EARL OF CLARENDON, K.G., G.C.B.

President:

THE MARQUIS OF DOWNSHIRE.

Vice-Presidents:

Marquis of Waterford.
Marquis of Hertford.
Earl of Erne.
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Viscount Massereene.
Viscount Dungannon.
Viscount Bernard, M.P.
Lord Rossmore.
Lord Monteagle.
Lord Lurgan.
The Lord Bishop of Down, &c.
Sir J. M. Stronge, Bart.
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A. Shafto Adair, Esq., M.P.
Thomas Conolly, Esq., M.P.
H. M'C. Cairns, Esq., M.P.
Very Rev. the Dean of Ross.
W. S. Crawford, Esq., D.L., J.P.

Committee:

Anderson, Henry, J.P.
Andrews, W. G.
Birney, John.
Borthwick, John.
Campbell, James.
Carter, John. C.
Charters, John.
Clarke, George J., J.P.
Crawford, John S., J.P.
Dargan, William.
Ewart, William, Jun.
Filgate, Fitzherbert, J.P.
Gordon, Robert F., J.P.
Hancock, John, J.P.
Herdman, John.
Hind, James.
Kennedy, Victor C.
Mulholland, S. K., J.P.
M'Carten, John.
Niven, Richard.
Preston, John.
Reilly, J. T, D.L., J.P.
Richardson, Jonathan J., M.P.
Walker, Samuel.

Treasurers, ... THE BELFAST BANKING COMPANY.
Auditors, ... JOHN CHARTERS. JAMES CAMPBELL.
Secretary, ... JAMES MACADAM, Jun.

Office,—*Commercial Buildings, Belfast.*

RULES OF THE SOCIETY.

I.—That all persons paying a subscription of *one guinea*, annually, be constituted ordinary members.

II.—That the Society, besides its ordinary members, do consist of a President, Vice-Presidents, a General Committee of Management, a Treasurer, and a Secretary.

III.—That the Treasurer and Committee of Management be annually elected, by general meeting of the Society, from among its members.

IV.—That the Society do meet in the month of November, of each year, to elect officers, hear reports, make or alter rules, and transact such other business as may come before it.

V.—That the General Committee do meet on the last Wednesday in each month for the transaction of the ordinary business of the Societ ; three members required to constitute a quorum: the Secretary to call special meetings, at the request of three members of the Committee, who may judge it expedient to do so.

VI.—That, as the utility of this Society will be much promoted by a number of persons taking an interest in it, it will be accessible to all, on the payment of one guinea, annual subscription; but, as the funds so procured would be, most probably, inadequate to its management, donations shall be solicited from persons who can afford such sums as will enable the contemplated objects of the Society to be effectually carried out; and it is confidently expected, that, for an object of such national importance, such contributions will be given as will put its success beyond a doubt, as far as the means of working it are concerned; and that the zeal and discretion of its managers will secure that benefit for the undertaking which its importance demands.

VII.—That every one who becomes a member shall continue to be considered as such, and his subscription justly due to the funds of the Society, until he gives notice, in writing, to the Secretary, of his intention to withdraw.

VIII.—That no member, in arrears two years or more, shall be permitted to take part in any debate of the Society, or give a vote upon any question, until such arrears be paid up.

IX.—The Treasurer shall receive all moneys belonging to the Society, and lodge same in the Bank which may be appointed to keep the accounts, when it may accumulate to the sum of £50 in his hands. He shall also draw cheques, and pay such sums as may be voted by the General Committee, at its meetings, but not without its authority; and said cheques shall be signed by the Chairman of the meeting, the Treasurer adding also his own signature. He shall also furnish a yearly statement of accounts, and report monthly receipts and expenditure, at the General Committee meetings, showing a list of members whose subscriptions remain unpaid, at least once a-year.

X.—The Secretary shall conduct the correspondence of the Society, keep the books of it and of the Committee, take charge of all matters connected with their proceedings, give notice of meetings to those entitled to them, and attend to any duties the Committee may direct.

XI.—All new rules, or alterations of the present regulations, to be made at the annual meeting of the Society; notice of such rule or alteration to be proposed having been given to the Committee, at least a fortnight previous to the general meeting.

XII.—That this Society shall encourage Branches, in different districts, for the purpose of forwarding its objects,—to correspond, and otherwise co-operate with the General Committee; the President of each of the Local Branches to be an *ex-officio* member of the General Committee, and to be entitled to the regular notices of meetings,—each Branch to consist of subscribers to the Society only.

XIII.—That, in order to afford every facility to Local Farming Societies and Branches, in the South and West of Ireland, for obtaining the services of the Flax Society's Agriculturists, the following be the regulations in future:—

First.—Every Branch or Local Farming Society, as aforesaid, which shall incorporate itself with the Flax Society, by contributing to it not less than *Ten Pounds*, annually, shall be entitled, while it so contributes, to the service of a Flax Agriculturist, for two weeks in the sowing, and three in the pulling seasons; the salary of the Agriculturist, and his travelling expenses to the district, to be defrayed by the Flax Society; but his expenses, while occupied within the bounds of the district, to be defrayed by the Local Society or the individuals employing him.

Second.—The Flax Society will send to the Local Society, so qualifying, one of the Agriculturists, during the Winter, if required, to select and prepare land for the flax crop.

Third.—A sufficient supply of the Society's publications will be furnished free, of charge.

Fourth.—An additional week of the Agriculturist's services will be given, for every additional *two pounds* subscribed by the Local Society.

XIV.—That, in case of any individual landed proprietor being desirous of introducing flax culture in a district where there is no Local Society, or where it has not qualified, a subscription of not less than *one guinea* to this Society will entitle each individual to a certain time of the Agriculturists' services, to be regulated by the Committee of the Flax Society; and that, in all such cases, the expenses of the aforesaid Agriculturist, to and from the district, and while engaged on the estate, shall be defrayed by the landed proprietor so requiring him.

ROYAL SOCIETY

FOR

THE PROMOTION AND IMPROVEMENT

OF THE

GROWTH OF FLAX IN IRELAND.

(FROM "THE BELFAST DAILY MERCURY," OF 25TH NOV., 1854.)

YESTERDAY, the Fourteenth Annual Meeting of the Society for the Promotion and Improvement of the Growth of Flax in Ireland was held in the Chamber of Commerce, Belfast. Among those present we observed the following;—The Marquis of Downshire, the Lord Bishop of Down and Connor and Dromore; A. Shafto Adair, M.P.; Jonathan J. Richardson, M.P.; J. Temple Reilly, D.L., High-Sheriff of Down; William Sharman Crawford, D.L., Crawfordsburn; John M'Neile, D.L., Parkmount; R. Perceval Maxwell, J.P., Groomsport; Thos. Greg, J.P., Ballymenoch; Jas. Agnew, J.P., Cairncastle; Dr. Andrews, Vice-President, Queen's College; Professor Hodges, Fitzherbert Filgate, J.P., Hillsborough; S. K. Mulholland, J.P., Eglantine; G. J. Clarke, J.P., Steeple; J. Roberts, Collin; John Charters, William Owens, Drogheda; S. Sykes, Leeds; James Campbell, R. Niven, Chrome-hill; J. Herdman Thomas, Walkington, Ballinderry; J. Borthwick, Killroot; John Preston, J. Hamill, Trench-house; A. Bernard, J. Wilson, Carrickfergus; John Praeger, Robert Leadbetter, Gustavus Heyn, James Malcolm, Lurgan; W. Charley, Seymour-hill; Robert MacAdam, J. Watt, Samuel Vance, J. Koch, Cregagh; Charles Shaw, Crommelin Irwin, New Grove; John Finlay, W. C. Heron, David Connor, Rev. J. Scott Porter, John Hind, Charles Finlay, James Hind, &c., &c.

The meeting being held in the Chamber of Commerce, in consequence of the Society's large room having been temporarily lent, as a news-room, during the alterations now making in the Commercial Buildings, there were but few samples of flax, &c., shown at this annual meeting. We noticed some extremely long and well-saved flax straw, grown from home-saved seed, in Counties Cork, Meath, Leitrim, &c.; some fine specimens of seed, from various localities; two very soft samples of fibre, of prime quality, prepared on the Courtrai system, in County Cork; fibre from the white-flowered flax, grown by Mr. James Sharman Crawford, at Redemon, County Down; and some hemp stalks and hemp fibre, from County Cork.

Shortly after twelve o'clock, the Chair was taken by

The Marquis of Downshire.

The Noble CHAIRMAN called on the Secretary to read the Report.

The SECRETARY then read the following

ANNUAL REPORT.

"In submitting their Fourteenth Annual Report, your Committee would, in the first instance, advert to the effect which the grave political events of the past twelve months have had in seriously increasing the responsibility which rests on them, as your executive, in the discharge of duties of great importance to the agriculture and manufacture of these kingdoms. They venture to hope that you will approve of the measures they have adopted to provide against the exigencies of the year, and that you will continue to extend to them that confidence which it has been their privilege hitherto to enjoy.

"EFFECTS OF THE WAR.

"When war was declared by her Majesty's Government against the Emperor of Russia, it was at once apparent that the interruption of our commercial relations with that empire might seriously affect the supply of the raw material of the British and Irish linen manufacture, as well as of the seed which has hitherto been obtained from Riga, for sowing in Ireland. When it is remembered that, of an annual average import of 80,000 tons of flax, from all countries, nearly 60,000 are brought from Russia alone; and that, of the yearly import of flaxseed for sowing in Ireland, from two-thirds to three-fourths come from Riga, it will at once be seen, that the cessation or diminution of the supply of these articles, as a consequence of the war, might be productive of serious inconvenience to the linen manufacturers of the United Kingdom, and the flax growers of Ireland.

"For so far, however, events have turned out differently from what was anticipated; the permitted import of Russian produce, through the ports of Prussia, having secured even a larger supply than usual of flax, the quantity received, during the year ended 5th October last, being 86,837 tons, from all countries, against 74,418 in the same period of 1852-53. But, as the continuance of this supply, and the entire shipments of seed, for next Spring's sowing, depend on the continued neutrality of Prussia, and the policy of permitting the transit trade being adhered to by our Government, and both of these being uncertain, no reliance can be placed on the ensuing year maintaining the same features, in these respects, as the last.

"MEASURES TAKEN BY THE COMMITTEE.

"Being fully impressed with a sense of the losses to which the linen manufacture would be subjected by an insufficient supply of its raw material, your Committee made every possible exertion, in Spring, to secure a large sowing of flax in Ireland. Their prospects of success in these efforts, were by no means encouraging. The Irish flax crop of 1853, was very much under an average in yield, and its cultivation did not, consequently, afford the usual profit; while the very high rates obtainable, in the markets, for grain, during last Winter and Spring, also operated to induce farmers to lay down a larger breadth of cereals, at the expense of the area otherwise reserved for flax. Your Committee were not deterred by these obstacles. At an early period of the season, they adopted vigorous measures to influence the sowing of flax. They issued, and widely distributed, in a printed form, the reasons which, in their opinion, should induce farmers rather to increase than diminish their cultivation of the plant, and they were fortunate in being ably seconded by the Irish press, which laboured to inculcate similar views, and to give corresponding advice. At a later period, before the maturity of the crops, they earnestly urged every farmer to save a portion of the seed, by drying on the stalks, for next year's sowing, while reiterating their advice on the general advantages of saving the seed by rippling, green, for feeding or crushing purposes. Eight thousand copies of instructions for both ways of saving were distributed, over every County of Ireland, and placards, showing the importance of providing a substitute at home, for Riga sowing seed, were posted up throughout the entire Province of Ulster, and in many other parts of Ireland.

"THE IRISH FLAX CROP OF 1854.

"An early application was made to the Lord Lieutenant of Ireland, that the returns of the breadth of flax should be made out at a period anticipatory of their usual collection; his Excellency was at once pleased to comply with the request. These returns, after their final revisal, show the entire area under flax, in Ireland, in the present year, to be 150,729 acres, against 174,579 acres in 1853. There has thus been a diminution, on the year, of 23,607 acres, or about fourteen per cent. Your Committee had fully anticipated a much larger falling off, owing to the circumstances already referred to, and they feel satisfied that their exertions in Spring have contributed to prevent a more considerable decrease. The average annual growth from 1847 to 1853, inclusive, was 101,939 acres, so that the crop of 1854 is about fifty per cent. above the average of the previous seven years. If 1853 be left out, the annual average of the preceding six years is reduced to 89,677 acres, and this year's crop is nearly sixty-seven per cent. greater than that average. From the very different yield of the crop of 1853, there is reason to believe that the quantity of marketable fibre, this year, will be equal to that of the previous crop, and its value may be roughly estimated at about two millions sterling. The quality is generally of the lower kinds; the fibre is strong, and yields well in the spinning mills.

"OPERATIONS OF THE YEAR.

"The Lord Lieutenant having recommended, and the Treasury having sanctioned, the usual grant of £1,000 from the Irish Reproductive Fund, to defray the year's cost of practical instruction in those Counties of the South and West to which the fund is applicable, the Society's operations were carried out on the same extensive scale as formerly. Nineteen instructors were employed, at the usual seasons, in imparting practical information to flax growers. They were located in districts of the following Counties :—Donegall, Londonderry, Down, Cavan, Leitrim, Sligo, Mayo, Galway, Roscommon, Longford, Westmeath, Louth, Wexford, Meath, Louth, Cork, Kerry, Clare, Limerick, and Tipperary. In addition to their usual staff, your Committee availed themselves of the services of two individuals, who, from their knowledge of flax culture, and their local influence in two of the Western Counties, have been very useful in furthering the Society's objects.

"MARKETS IN NEW DISTRICTS.

"Having, last year, with the co-operation of some leading flax spinners and merchants of Belfast, established a round of markets in certain central towns of the new flax-growing districts; and, finding that the attendance of buyers on the spot increased the confidence of the growers, your Committee again arranged for the holding of flax markets, in last March, in the towns of Cork, Limerick, Athlone, and Enniscorthy, where about 50 tons of fibre were disposed of. In order to increase the stimulant afforded by these local markets, your Committee gave £20 in prizes, for the best quality, and for the largest quantity, of flax sold in each. The highest price obtained was £84 per ton, and the largest quantity sold by an individual was 12 tons.

"SAVING OF SEED.

"It is admitted that the quantity of Irish seed saved for sowing is greater than in any previous year. One large landed proprietor in County Cork has the produce of 2,400 Irish acres, and a mercantile firm in Derry holds 2,000 barrels. At the retteries, considerable quantities are available, and throughout the country a great number of farmers, acting on the advice given them, have saved sufficient for their Spring sowing. Several satisfactory communications have again been made, as to the excellence of home-saved seed, and the prejudice against it is, in many localities, fast wearing away; although, on the other hand, the use of unsound or badly-saved seed has deterred others from repeating the experiment. Rippling has been practised to rather more than the usual extent this year, and a trade is beginning to spring up, in some of the inland towns, of purchasing the seed from farmers, and selling it to crushers or cattle feeders. This is well calculated to encourage the saving of seed, by affording a market on the spot.

"The new oil-mills, alluded to in last Report as having been established in the interior of the country, chiefly through the advice of the Society's Belgian Instructor, are now working; and, if others be erected, it will still further tend to favour the saving of seed.

"PATENTED SYSTEMS OF STEEPING.

"Fourteen establishments for the steeping of flax, on the different patented methods, are now at work in Ireland. Some of them steep a portion of their flax in open air tanks; all employ the late improvement of pressing the flax-straw between rollers, after its removal from the steep, and, in consequence, the fibre shows a marked superiority in quality and cleanness. In order to show the importance attached to the rettery system, as enabling the grower to sell his flax crop, without being obliged to go through the details of steeping, drying, and scutching, it may be mentioned that large retteries are now in operation in England and Scotland, in France, Belgium, Holland, Austria, Prussia, and Bavaria.

"While the processes at present in use are acknowledged to possess great merits, the attention of many minds has been turned to their improvement, or to the invention of others for the attainment of the same end. Your Committee continue to receive communications from persons who direct themselves to these investigations; and, during the present year, they have been more especially in correspondence with M. Tesrangne, Signor di Sorresina, Mr. Turnbull, of Dundee; and some others. They have, in all cases, invited full explanations on the processes whose invention is claimed by the several parties, and have advised the establishment of concerns where each could be shown practically at work, and where an opinion could be formed on their relative merits. From the amount of attention which the subject has excited in inventive minds, they are sanguine of still further improvement being carried out in this important department. Among the minor inventions which so frequently come before them, is a process brought out by Mr. Jennings, of Cork, and now in very extensive use by Messrs. Marshall, of Leeds, by which it is stated that coarse flax fibre can be rendered fine, and imbued with more 'spinning quality.'

"UNSTEEPED FLAX FIBRE.

"The plan of preparing the fibre, without steeping, has, on former occasions, been alluded to. It is now being carried out, practically, on a very large scale, by Mr. Roche, M.P., for County Cork, and the fibre is stated to find a ready market in England for certain coarse purposes. The price obtained is considerably under that of steeped flax, but, as the expense of steeping is avoided, it is stated to be sufficiently remunerative.

"CONVERSION OF FLAX TOW INTO WOOL.

"It will be remembered that this Society, from the first, felt it a duty to expose the fallacies of Mr. Claussen's proposition to convert flax fibre into a substitute for low qualities of cotton, and they went on the ground that serious loss and waste would be incurred by making, out of an article worth, on an average, 6d per lb., a substance to compete with cotton at 3d. At the same time, they expressed an opinion that scutching tow, from its low value, might be operated on with a better chance of success. Although the flax-cotton project fell to the ground, your Committee learn that, when scutching-tow is subjected to Claussen's process, it is converted into a substance well adapted for mixing with wool; and that, in Scotland and Belgium, establishments are working, very successfully, on this principle.

"SCUTCHING MACHINES.

"Among the number of new inventions, proposing to do away with skilled labour in the scutching process, which, from the expense and other great disadvantages attendant upon it, is equally unsatisfactory to the farmer and the scutch-mill owner, the machines of Lawson, of Leeds, M'Bride, of Armagh, and Wilson, of Fifeshire, have been prominently before your Committee and the public. All claim the advantage of being, so to speak, self-acting, and all are now at work in different localities of Ireland. Your Committee have tried the working of Wilson's machine, and, from the results, have since recommended it to individual flax-growers, on account of its small cost and portability, The two others are intended for large scutching concerns. With respect to Lawson's, your Committee have not sufficiently extended information to speak with confidence. M'Bride's machine, now at work in several places, is stated to scutch fifty to sixty stones of flax daily, with the attendance of women or boys. Other inventors have intimated that they will soon be ready to exhibit machines of novel construction and great capabilities; and your Committee will carefully watch and examine all new plans of scutching, being convinced that a great economy in this process may be carried out. Taking the present annual production of Irish mill-scutched flax at 25,000 tons, and supposing, which is by no means improbable, that, by the introduction of self-acting machines, the expense of the process may be reduced one-half, or to 6d per stone, the annual saving would amount to nearly £90,000; so that it becomes of extreme importance to ascertain the most efficient and economical of the various machines which have been, or may be, brought out by inventors.

"NEW SCUTCH MILLS ERECTED.

"The Government returns shew the number of scutching-mills in Ireland, in 1853, to have been 1,056, with 5,871 stocks, against 956 mills, with 5,053 stocks in 1852; being an increase, on the year, of 100 mills, and 718 stocks. In the Provinces of Leinster, Munster, and Connaught, the number of mills was the same as in 1852—viz., 40; but the number of stocks had increased from 331 to 356, and three worthless old mills had been pulled down, and three others of modern construction had replaced them, in other districts. Since these returns were drawn up, intimation has been received by your Committee of the erection of new scutch-mills in various places, in the Counties of Meath, Wexford, Cork, Clare, Galway, Leitrim, and Roscommon. This is highly satisfactory, since no real progress can be made, in any district entering on the culture of flax, without such means being provided for the preparation of the fibre for market.

"NEW VARIETIES OF FLAX, &c.

"The attention of your Committee has been directed to the chance of finding a variety of the flax plant which might furnish a larger yield, and a finer quality of fibre Some seed of two new varieties was procured, both producing white flowers—one being said to be indigenous to Guiana, and the other, a chance variety, with yellowish seeds, discovered in Ohio. Several of the Society's members have grown, experimentally, small portions of these, and have reported upon the results; but, as yet, no decided opinion can be formed on the possible advantages of either.

"Some seed of the Bokhara Clover *(Melilotus arborea)*, and of the China Grass *(Urtica nivea)*—both fibrous plants—has been tried on a small scale, and when the trials have been fully carried out, the results, as well as those of the foregoing, shall be made public.

"Of hemp, also, about forty acres were grown, this year, in County Cork, at the suggestion and under the direction of our Belgian Instructor. It cannot be doubted that the question of hemp-growing in Ireland is one of considerable importance, since 60,000 tons, value £1,800,000, are imported, yearly, into the United Kingdom, from foreign countries. Flax culture and hemp culture go hand in hand in Belgium, Russia, and other European countries; and as the experiments hitherto made in Ireland shew strong grounds for believing our climate and soil to be as propitious for the one plant as for the other, your Committee, incidental to their other duties, will not lose sight of this subject.

"INTERCOURSE WITH FOREIGNERS.

"Among the most pleasing evidences of the important position attained by the Society, and the wide-spread recognition of its utility and experience, is the weight attached to it everywhere, as the central authority in all matters relating to the culture and preparation of flax. When it is remembered that the estimated annual value of the flax produced in all countries is £26,000,000, and that, without an exception, the Society has members and correspondents in every country of the globe where flax is cultivated to any extent, the significance and importance of this fact will be at once apparent. During the past year, for example, your Secretary has been in correspondence with gentlemen residing in Austria, Prussia, Bavaria, France, Holland, Belgium, Italy, and the United States of America. Communications have been received from many persons, some of high official rank, relative to the economising of the flax fibre of India—a subject to which much interest is at present attached. It is almost unnecessary to add, that the information in the possession of your Committee has been most fully and willingly imparted, both to the representatives of British Colonies and to the citizens of foreign States; and your Committee continue to regard this interchange of views and facts, bearing on the subject which is their especial care, as most valuable to the Society, while they believe it to be most useful to their correspondents abroad.

"EXPORTS OF IRISH FLAX AND TOW.

"One of the most interesting features, marking the great increase of flax cultivation in Ireland, is the rapid augmentation of our export of flax and tow, chiefly to Great Britain, but, also, to some extent, to France, and, in small quantities, to other foreign countries. So late as 1850, the export of Irish flax and tow was but 3,166 tons. Of the crop of 1852, 6,696 tons of flax, and 2,308 of tow, in all, 9,004 tons, value £392,500, were exported. Of the crop of 1853, the large amount of 7,486 tons of flax, and 2,763 tow, in all, 10,249 tons, value £505,989, where shipped from Ireland to England, Scotland, and France. If, at the time this Society was founded, it had ventured to predict that, besides supplying her own extensive wants, Ireland would export in one year, to the value of upwards of half-a-million sterling of the raw produce of her flax fields, very few individuals would have placed any faith in such a prediction.

"CONCLUSION.

"While it will be evident, from the details now laid before you, that the year 1854 has formed no exception to the steady onward progress which has, from the first, marked the Society's career, and crowned its labours, it will, on the other hand, be a source of regret to remember thar this year has been one of severe trial to our staple manufacture. From a variety of causes it has suffered, to an almost unprecedented extent, in every branch, being, in fact, in the passage through one of those crises which mark the occasional refluxes in the advance of all the great staple manufactures of the United Kingdom. It is, however, cheering to recollect that these occasional retrogressions have invariably been the precursors of further progress, and, with a knowledge of the sound basis on which the great textile manufacture of Ireland rests, while regretting its temporary depression, we may look confidently forward to its future prosperity. The prospects of Irish flax growers are too closely interwoven with those of the Linen Trade not to be affected by its condition; but, as there are already symptoms of a favourable change, they may look to the future with tolerable confidence. Your Committee hope, and, indeed, anticipate, that, when they meet you, next year, to render an account of their stewardship, their Report will be less chequered with shadows, and will furnish a more complete record of progress and prosperity."

ACCOUNTS.

The Secretary then read the annual statement of accounts, from which it appeared that, on the debit side, there was a balance on hands of £316 14s 5d at the last annual meeting, and the receipts for the year were, for subscriptions paid in, up to 31st October, £317 8s, and grant from Government, £1,000; total, £1,634 2s 5d. The credit side showed disbursements to the amount of £1,435 6s 8d; and a balance on hands of £198 15s 7d.

"GROWTH OF HEMP.

"The SECRETARY then submitted a summary of the following Report:—

"'TO THE COMMITTEE OF THE ROYAL FLAX IMPROVEMENT SOCIETY OF IRELAND

"'GENTLEMEN,—According to instructions received from your Secretary, who directed me to attend particularly to the hemp crop, some acres of which were under cultivation this year in County Cork, I have now the honour of bringing the following under your notice.

"'A certain quantity was cultivated in the West Riding, by J. Smyth, Esq., on the Bandon estate. In his case, over four bushels of seed had been applied to the statute acre. In some fields, almost no plants made their appearance, from the nature of the seed, while in others, where the seed sown was good, the crop was overstocked with plants, which, from the poor state of the soil, as well as from the unsuitable preparation which had been made, reached only an indifferent length. A second lot was sown in the East Riding by Miss Roche and others, with similar results. A third laid under cultivation by N. M. Cummins, Esq., at Riverstown, with 1¾ bushel of seed sown to the statute acre, made a fine appearance, until the part which was rather overcast with seed became smothered under the weeds, while the other part, where only 120 plants to the square yard came forward, reached the length of the sample, of which I now forward you both straw and scutched fibre. From the partial failure in obtaining an even crop, for reasons given above, the only part of the progressive stages of the crop, which could be ascertained with accuracy, was the yield of clean fibre from the steeped straw, which, in the accompanying sample, amount to one-twelfth instead of one-sixth, ordinarily obtained in Belgium.

"'Although these experiments have not proved very successful to the growers, the latter fully understand the reasons. These experiments, however, are of great importance, in regard to the future line of conduct to be pursued, to bring the hemp crop to a successful result in Ireland. They have, in the first place, proved that the soil wants a good selection and preparation; secondly, that the quantity of seed, as formerly recommended by many persons, even over four bushels to the statute acre, equal to 800 plants per square yard, is not at all calculated to bring the crop forward to a good result, unless with a very rich soil; thirdly, that the crop cannot be cultivated on the regular drill system, as recommended by some agricultural papers, inasmuch as a twenty-four-inch drill could never hold the required number of plants to produce a proper yield of straw; fourthly, that the widest grown crop will be the most productive in all ways.

"'From personal observation, I have arrived at the opinion that hemp can only be beneficially grown in Ireland in the following manner;—It should be sown after potatoes, the field being thoroughly cleansed while digging that root. The hemp crop can be followed by a flax crop, as practised in Belgium. The hemp should receive some artificial manure—such as guano, or rape-cake dust—at the sowing period, to create a quick stimulus to the young plant, the manure to be applied with the seed. The seed should not be sown either in broad-cast or in drills, but with the usual corn-sowing machine, and covered, crossways, with the roller; or, still better, ploughed in, in the same way as wheat, along with the artificial manure, so that the crop will be in drills of three to four inches apart. As only 140 plants, at the most, per square yard, are required, and each pint contains 10,570 seeds, it follows that thirty-two quarts would be a sufficient quantity of seed per statute acre; but I would recommend an increase of one-fourth of that quantity for the following reasons;—Experience has shewn me clearly that, although the female plant is the most vigorous at the ripening period, the male plant will take the lead until it arrives in blossom; that the male forms about a fourth of the whole crop, and possesses little fibre, and that of inferior quality, reaching maturity fully four weeks before the female. By pulling the whole crop at the ripening period of the female, the male plant becomes valueless. By taking a medium—that is, two weeks after the ripening of the male, and two weeks before that of the female—the valuable seed is sacrificed, and the straw steeps unevenly, with a mixed fibre of inferior quality. To obviate these evils a very simple plan may be adopted. By sowing the crop in drills, as described above, a fourth of the plants can be easily removed, and as the male takes the lead, by simply pulling the most advanced plants at the time the crop is six to twelve inches high, it will turn out an almost female crop, securing the greatest yield in both seed and fibre, without any after trouble in the treatment between the plants of each sex. The experiments have also convinced me of the possibility of taking off the seed by the ordinary threshing machine, provided an even crop be obtained; and that the hemp straw can be scutched in the common flax-scutching mill, by simply having the diameter of the beaters, to which the wipers are attached, enlarged, and the stock brought to an equal elevation, which can be done by excavating the ground where the stocks have to be used for hemp scutching, though attached to the same revolving shaft.

"'Proposing to make some further experiments, which shall be duly reported to you,—I remain, gentlemen, your very obedient humble servant,

"'J. De Cock, Belgian Instructor.

"'Cork, Nov. 11, 1854."'

The Secretary having concluded the reading of the Report, stated that he received letters of apology from the Earl of Erne, Viscount Massereene, Lord Lurgan, Mr. Kirk, M.P., and other members, regretting that they were unable to attend the meeting.

Mr. William Sharman Crawford, D.L., then came forward to move the adoption of the Report. He said that, in that Report, the Committee claimed from the Society and from the country, the continuance of that support and confidence which it had enjoyed for a period of upwards of thirteen years. He trusted that that Committee were eminently entitled to a continuance of that same confidence;

when a Society had been in operation for so long a period as from thirteen to fourteen years, it was a natural question to ask, what had that Society done to deserve a continuance of their support? He (Mr. Crawford) fearlessly placed himself in a position of responsibility, to answer that question. He had no doubt a statement of the true facts would prove that that Society had been eminently useful in the object for which it was formed. He might refer first to the commencement of this Society. (Hear.) It commenced in the year 1841. Previous to that time, the flax-spinning trade had progressed in Belfast to a considerable extent, and it was felt by several gentlemen connected with that trade, that it was a very unfavourable position for them to be placed in, to be depending, in so great a degree, on the foreign supply for home consumption, especially when it was considered that Ireland was eminently adapted, by its climate and soil, for the production of that very material which they were obliged to obtain from foreign markets. It was thought by these gentlemen, that the home-cultivation of flax would not only be a saving to the trade, but also a benefit to the agricultural interests. With these objects in view, and for this purpose the Society was formed. It wished to encourage a home supply, and, by that means, not to leave the trade dependent on the foreign supply alone, (Hear, hear,) It was desired to improve the system of culture in Ireland, and the system of preparing flax, because it was found that the flax generally produced in this country, in consequence of mismanagement, was of that description which was not calculated for fine work. It was also an object to encourage the saving of flaxseed, because it was known that in Belgium the saving of flaxseed accompanied the production of the fibre; and it was thought that it would be very beneficial in this country to encourage the saving of the seed also. It was also desired to increase the national wealth by preventing the large exportation of the property or money of the country, to obtain that from foreigners which could be obtained in our own market, and it was the wish of the Society to encourage the combination of the manufacturing and agricultural interests in one common object, as the best means of promoting the prosperity of both. Now, he would venture to call the attention of that meeting to a few facts, in order to prove what this Society had done. Until the year '48 they had no official returns from Government of the different quantities of produce produced in Ireland. In that year they had, for the first time, a statement of the number of acres, by official authority, applied to the production of flax. In the year '48, he found that the number of acres in Ulster was 49,549. In '53, that had risen to 160,308. In Leinster, in '48, the number was 1,239; and in 1853 it had risen to 4,497. In Munster, in '48, the number was 1,249, and in '53 it had risen to 5,225. In Connaught, in '48, it was 1,826 acres; and in '53 it was 4,549. In '48, the whole number of acres applied to flax culture in Ireland was only 53,863; and in '53 it had amounted to 174,599. Now, he trusted that these facts were a sufficient indication of the practical results of the efforts of this Society. He thought they might fairly claim credit for the large increase which he had shewn them. In the year '54—that was this present year—the quantity of acres in Ireland appropriated to flax, was 150,972, being a diminution of 23,000 acres, as compared with last year; but the cause of that decrease were stated in their Report, and he thought sufficiently explained in it; and, it was also to be remarked that, in the last year there was a diminution in all the cropped lands in Ireland, to the amount of 128,575 acres. Therefore, it was not astonishing that, when there was a diminution of so large an amount in the whole number of acres applied to crops, as compared with former years, there should be also a diminution in the quantity of land applied to the flax crop, The Report referred to the result of the efforts of the Society, with regard to the saving of the seed. He had not now statistics to prove that; but, he believed it was confessed that large quantities of seed were now saved—a practice which was hardly thought of at the time this Society commenced. But, although the flax culture had been extended to the degree he had mentioned, yet it was plain that there was a large margin still for useful exertion. He would refer to a few facts to shew this. In Ulster the whole lands under crops—according to the Government returns this year—amounted to 1,808,935 acres. The number of acres sown under flax was 139,003. Therefore, if they examined the proportion which the acres sown with flax bore to the acres sown with crops, they found that it was 1-13 in Ulster; but, then, if they took Leinster, Munster, and Connaught, they found that the acres under crops amounted to 3,759,441, and those under flax 11,969, bearing only a proportion of about 1-314th part of the whole land applied to the purposes of crops. Now, when they saw so small a proportion of the land of Ireland applied to the cultivation of flax, they should be able to perceive that there was a large field for the operations of that Society in endeavouring to increase that produce. He did not wish to see large tracts of land appropriated solely to the flax culture. He thought that would never be beneficial. He would not wish to see the flax culture occupying more than a portion of the regular rotation of the farmer's produce. He would not like to see it exceeding the proper proportion which the farmer ought to raise. He had no wish to force the cultivation of flax as a substitution for the cultivation of corn, which was the food of the people; but a proper cultivation of flax might be encouraged, without any undue infringement upon the land allocated for crops; for the cultivation of flax ought to be a crop after the corn crop, and not superseding it. Then it was to be considered (and it was a serious subject of consideration), if they desired to extend that culture—by what means they were to operate. (Hear, hear.) It was for them to inquire what were the obstacles to its cultivation, and, if they did so, they would find that the farmer had difficulties to encounter of several kinds. He had a difficulty in the preparing and saving of the flax, and afterwards in selling it. Now, it was impossible that the flax culture could progress unless the means of getting it prepared for the purpose of manufacture were supplied in sufficiently abundant quantities. It was absolutely necessary that the farmer should obtain an easy resort to scutch-mills. It was absolutely necessary that he should obtain a market for it, and until these means were supplied in one way or other, they could not expect any great progress in the South or West of Ireland in the cultivation of the flax crop. The Report referred to the factor system. That system had been referred to in former Reports of the Society, and it had always been an object with the Society to encourage that system which he believed to be beneficial. The Report referred to an attempt by the Society to create markets, which, was, also, a very advisable means of assisting the farmer. But there could be nothing more important than the scutch-mills. They had, in a late Government statistical return, a statement of the number of scutch-mills in different parts of Ireland. In Ulster, the number of scutch-mills was 1,016, with 5,515 handles. In Leinster, the number of scutch-mills was only 18, with 144 handles. In Munster, the number was 17, with 165 handles; and in Connaught, the number of mills was 5, with 47 handles. Unless the scutch-mills in these Provinces were increased, there was no prospect of a successful cultivation of the flax crop. It was not only the flax-spinning manufacture that was dependent on the procuring of an ample supply of the raw material, but the linen trade itself depended in a great measure on it, because, if a sufficient quantity of raw material be not supplied to the spinner, he could not afford to give the yarn at that reasonable rate which would remunerate the ulterior manufacturer on beneficial terms. The Report referred to what might be the consequences of the present war, in reducing the supply from foreign markets, and, therefore, the more imperative necessity which existed for encouraging the home product. The importance of the linen trade to this country was very great. The prosperity which this portion of Ireland had attained was most certainly owing, in a great measure, to the linen manufacture. The linen manufacture, after it was established, some centuries back, was the source of much employment, and the cause of the promotion of industry to the great mass of the population of this country. Although the people of this part of Ireland were eminent for their industrious habits, yet their disposition to industry would be worthless, except they were supplied with the means of exercising it. The linen manufacture pre-eminently had that effect; and although the course of manufacture had been changed in a great degree and withdrawn in a great measure, from the peasant's hearth, yet, nevertheless, its effects remained behind. It taught the people a system of self-reliance and exertion; and though the working of that manufacture might change its course, yet still the people having been taught these habits of industry, continuing to apply themselves to some other means of industry had kept them in a state of prosperity; but still nothing could be so important to a population circumstanced as this part of Ireland was, as the connexion of manufacture with agriculture; and, let it be linen manufacture, or whatever other manufacture it might be, it was their duty to endeavour to promote it. (Hear, and cheers.) It might be useful, in speaking of the condition of the people of this part of Ireland, to refer to the number of the holdings, which renders it more peculiarly necessary that the connexion of manufacture should be maintained with agriculture. They found that, in Armagh, in an arable area of 271,231, there were 22,636 holdings, being an average of about 12 acres to each holding. In Down, in an arable area of 526,638, there were 31,082 holdings, making an average of about 18; and in Antrim, in an arable area of 601,748, the number of holdings was 22,634, being an average of about 26. Now, it was perfectly plain, from these statistical statements, that nothing could be more important to keep up the prosperity of a people so circumstanced than the connexion of agriculture with manufacture. Although they might admit, that it was desirable that a population such as they saw in some parts of the South of Ireland, incapable of supporting itself in any manner by employment—that a population so circumstanced should be removed or reduced, still, it was clearly necessary where a population, to a very large extent, had a comfortable existence, that the comforts of that existence should be promoted; and, however they might be desirable to see the removal of a population incapable of serving itself, yet, nevertheless, he believed every one must agree, that it is for the interests of the nation that a population should be preserved to the country which is capable of producing its own happiness and prosperity. He thought it unnecessary to trespass on their attention with any more details to show the value of this Society. He thought he was not going too far in stating that there was no Society in Ireland, or anywhere else, which has manifested more proofs of its success; and he thought he had shewn that there was a necessity for its continued existence, and a continuance of those efforts by which it had hitherto tended to promote the prosperity of Ireland. It was a pleasing thing to behold a Society which connected together, in a manner such as that meeting had done to-day, the landowner and the manufacturer, in one common object, to promote the prosperity of this country. These were the reflections which this Society created in his mind, and, having said so much, he should not further trespass on their attention than by moving the adoption of the Report.

Mr. Roberts seconded the motion.

On its being put,

Mr. Leadbetter said, that before the motion for the adoption of the Report was put to the meeting he had some observations to make, and some particulars to bring under their attention. Mr. Leadbetter was then proceeding to read from a paper he held in his hand, commenting upon the proceedings of the Society, when

Mr. Campbell said he should ask pardon for causing an interruption, but he should question very much the propriety of bringing forward written or printed statements to read at the meetings of the Society, without having previously submitted them to the Committee of Management.

Mr. S. K. Mulholland should say he also doubted the propriety of coming forward, at this time, with this statement. The question before the chair was, that the Report be adopted; and after that question had been put was the proper time to make these observations. He did not wish to say whether the statements should be made or not, but it appeared to him that this was not the proper time to make it. Any other period would suit better.

The Chairman—The matter, I should rather say, is out of order, in fact it is entirely out of order to read anything here that has not been submitted to the Committee. It has been moved and seconded that this Report be adopted.

Mr. Leadbetter said he would be very willing to take advantage of any opportunity the meeting would allow him, and would either state the observations he had to make verbally or read them from the paper he held in his hand.

The motion for the adoption of the Report was then put and carried without a dissent.

Mr. J. T. Reilly, High-Sheriff of County Down, proposed the next resolution:—“That each successive year's experience demonstrates still more the importance of the Society's objects, and that the Committee shall continue to labour as hitherto towards their attainment.” With regard to the first part of the resolution, he did not think it very necessary for him to delay the meeting with any remarks on the subject, after the eloquent statement that had been made by Mr. Crawford in proposing the first resolution; and with regard to the latter part of the resolution, he did not think it becoming in him, a member of Committee, as he had the honour to be from the commencement, though not as effective a member as he could wish, to say that the Committee would continue to labour henceforward as much as they had done hitherto. He, as he said, had shared in only a very small proportion of that labour, and perhaps on that account he was the better entitled to give them the praise and the credit which they deserved for the exertions they have for so many years successfully carried on. (Hear, hear.) And, more particularly, he would wish to dwell on the labours of those scientific and practical men who compose the Sub-Committees, and who have to report from time to time on the relative merits of the different inventions brought before them, which duty they had discharged in the most impartial and fairest manner, standing as they do, and as they have stood, between those inventors and the public, witholding the seal of their approbation from those inventions which they considered did not possess merit to entitle them to it, and giving it to those which they thought deserved that they should be brought before the public. (Hear, hear.) He need not dwell on the consideration of what these different inventions had been. They had been referred to, and they had been considered by the Committee impartially, although, perhaps, theirs was a thankless office—thankless, because those inventors whose inventions were brought forward, and which deserved the seal of the Society's approbation, imagine that theirs being the most important and most deserving the Committee could not do otherwise than award them the certificate of merit; and those whose inventions had no merit, comparatively speaking, imagining that they had reason to feel aggrieved with the Committee. (Hear.) He thought that the resolution which he had the honour of moving, was such as that the meeting would readily respond to, and he would only say in conclusion that the Committee may go on and prosper.

Mr. S. K. MULHOLLAND, J.P., in seconding the resolution, said he did so with very great pleasure, and he thought that if they would only trace the operations of the Society from its commencement to the present, as Mr. Crawford had so clearly and so cleverly done, they would be convinced that its labours and its influence had been most important. Looking at their labours during these past years they saw that the object was not only to increase the number of cultivators, but also to improve the mode of culture. He believed that the Society had accomplished a very great amount of good, but that there was still room for further great improvement. There had been flax grown in Ireland equal to the great proportion of the Belgian crop, and that was saying a great deal; in fact, it would appear that they had very little to learn as to the manner of growing flax, but that they had a great deal to learn before they arrived at anything like a perfect state as to the after processes. And he should also remark that the Society, having drawn the attention not only of this country but of the United Kingdom to the matter, could number among its other beneficial operations that it had drawn men of respectability, talent, and capital from the sister countries to engage in the pursuit of the manufacture of flax here. Among those who had so come over, he would mention the firm with which Mr. Leadbetter was connected—a gentleman of high respectability from Scotland, who had come over and located himself among them. And with regard to the several systems of flax preparation, whether Watt's, Schenck's, or others, he believed the Society had not pronounced any decided opinion. All these systems had their respective merits; and perhaps if they had one which would be a combination of them all, the greatest good must arise. And he thought it was a matter of the greatest interest to all to encourage capitalists and others to make different experiments in the way of flax preparation. He sincerely rejoiced to see such concurrence in the recommendation of the Society throughout the country, but they should endeavour to have the growing of flax attended to by one section, and the preparation of flax by another section, the high capitalists, as in Belgium, and if this were the case they should see in a few years the growth of flax attain that extension in this country which they all so much desired to witness. This was a matter that should have the anxious attention of the agricultural as well as the manufacturing body. At present, from matters that had been explained, the flax crop had not been very productive; the high price of grain, arising from causes which he hoped would speedily pass away, had made flax less attended to, but a change would come, and he hoped —as it would be for the interest of the country and the agriculturists especially—to see every farmer in the Kingdom setting apart a certain portion, if not a large portion, of his farm every season for the growth of flax. As a member of the Committee, he could assure the present meeting, although he believed the gentlemen present did not require that assurance, that the Committee would continue to labour as it had laboured to promote the extension and improvement of the growth of flax in Ireland. The Committee was an unpaid body, the members comprising it had no other object than the country's good, and with the exception of their respected Secretary, there was not an expenditure of a single pound among them. Their whole object was, without favour, or affection, or malice to any one, to extend the growth of this important article of commerce. Mr. Mulholland concluded by seconding the resolution.

The resolution being put from the chair was declared carried unanimously.

Mr. Alex. Shafto Adair, M.P., being called upon by the chairman, rose to move the next resolution; having read which, he proceeded to say that the meeting was aware of the effect of the recent proceedings by her Majesty's Government as regarded the importation of foreign produce into this country; but, at the same time, the apprehensions which had been entertained, as far as the supply of raw material for manufacturing purposes was concerned, were not carried out in the results. The supply appears to have exceeded what was expected, but he had to observe that this supply was obtained at a very great increase of charge, in consequence of the new direction which the flax obtained was compelled to take. He held in his hand a letter extracted from one of the public local prints of a few days since. That letter was from Berlin, and whether authentic or not, it showed that a very considerable accession to the price was caused by the change of route—for instance, that the addition by means of land carriage to Memel was no less than £10 per ton. This was a large addition, and on an average would be from 20 to 25 per cent. That the effect of the Russian war, as regarded this matter, then, had been prejudicial to the extension of commerce, was evident; but it was not only with respect to flax, in a state of war, but as regarded their relation to Russian produce in a state of peace, that they had at present to consider the case. In the meantime, they should see, that, whatever the flax of the Russian market was to them, it was in a state of uncertainty and disturbance, and that they might look forward to an almost total cessation. It was not necessary to enter on the political portion of the subject on that occasion, or to reflect whether the necessities of war might not justify her Majesty's Government in taking further and more restrictive measures, than had as yet been taken as regards the commercial relations of the two States. (Hear, hear.) They could not anticipate; but, as he had already said, at all events, great doubt and uncertainty lie over that part of the subject. If, however, he were to go further, and consider their relation with the Russian market in a state of peace and friendly communication, he should say that no amount of increase in the transactions with that market would be of such advantage as an increase in the quantity of home produce as regarded the raw material—(hear)—and for this reason, that they were labouring under very considerable disadvantages in obtaining from the Russian market that raw material. He had endeavoured to support, according to his capacity, the great economic truths which he believed had done so much good for the commerce and manufactures of the empire. He did not say that it may not be advisable, under some circumstances, to make money payments for articles that they required —for articles, for instance, of the first necessity—but he believed, as he had taken occasion, some two years hence, to express himself at a meeting of this Society, that in proportion as trade approaches to the condition of barter, both the producer and the consumer are benefited, and the carrying on of operations is made the more advantageous. (Hear.) They all knew that it was a very different thing indeed to discharge a debt of say twenty shillings by materials of their own manufacture, and to purchase twenty shillings in a common medium, such as bullion, gold, &c., to discharge that debt, because the intermediate transactions cost something in proportion to their extent. Such would appear to be the state of our relations with Russia. In a paper which he had much pleasure to read in a number of the *Industrial Journal* of this year, for which the journal was indebted to the pen of their able and energetic Secretary, Mr. MacAdam, he found that a large proportion, in round numbers three-fourths, of the total consumption of the country, was drawn from Russia, and that, not only as regarded flax, but also as regarded the seed, we are, to a very great extent, dependent for the supply we receive from that country—that in fact as regarded the balance of trade between the British empire and Russia on the one hand, and between the British empire and other countries on the other, the Russian empire furnishes us with produce to the amount of three-and-a-quarter millions, whilst other countries furnish us with produce to the amount of two-and-a-quarter millions for the same purpose. The Russians, therefore, have had extended operations with us; but notwithstanding this large intercourse with us in this matter, the proportion of our industrial productions and manufactures that is taken by them in return is trifling in the extreme. He found from the returns of 1851 and 1852, and from some information which had been afforded him by his friend Mr. MacAdam, that the imports from Russia in grain, flax, hemp, linseed, and tallow, and other articles, were to the amount of eight millions sterling, and he found that their exports to that country were only to the amount of one and a-half million sterling. Now, with regard to the other countries that we have to deal with, for the cargoes of merchandise we import from them we pay them in our own manufactures. But with regard to Russia, it was clear that such was not the case. He trusted that the production of flax in this country would be largely increased, and that the diminished surface of land laid down with flax in consequence of the increased price of cereal crops would be much enlarged. He did not desire an exclusive cultivation of flax or the displacement of any other crop to which the country was adapted. But in Ireland, or at all events in this portion of Ireland, the soil was peculiarly adapted for the cultivation of flax, and not so well suited for the growth of wheat. There was another reason why he wished a more extended growth of flax. It was a crop which the rich man and the comparatively poor might grow with advantage to themselves. The flax crop on the same space of ground would give a better return for labour than almost any other, and what importance that was in a country where the demand for labour was so small, compared with other countries, he need not explain to that assembly. It was of the greatest importance that they should increase their growth of flax in order to supply raw material for the linen manufacture, and he had great pleasure in moving the resolution which he had been entrusted with.

Mr. R. **Perceval Maxwell**, in seconding the resolution, said that the statements in it were so evident that they required but very few observations from him to recommend them—(hear, hear)—and if any doubt remained as to the propriety of adopting the resolution, it would have been effectually removed by the eloquent speech with which Mr. Shafto Adair had moved it. He regarded it as a matter of vital interest to the country to extend the growth of flax; and when he considered that that plant, produced in this country, afforded not only means of supplying the manufacturers with the material they required, but was also beneficial to a very great extent to the producer himself, by affording him a great proportion of food for his animals, he was still more firmly impressed with the great advantage of promoting its culture. In his district of the country there had been lately erected one of Mr. Leadbetter's establishments, and he believed he was correct in stating that the supply of the refuse used for cattle feeding was not equal to the consumption. He thought he need not detain the meeting longer, but would say that, apart from the importance of flax culture in itself, it became of greater moment now when they were engaged at war with that country from which hitherto they drew the principal portion of their consumption.

The resolution was then put from the chair and carried unanimously.

HEMP CULTURE.

The Secretary then submitted to the meeting a report from Mr. De Cock, Belgian Instructor, on the experiments made this year in County Cork, in the growth of hemp, which report will be found at page 16. Samples of the hemp plant, its fibre and seed, were on the table for inspection. There were also some specimens of fibre produced from the white-flowered variety of flax, grown by Mr. James S. Crawford, of Redemon.

The **Lord Bishop** of **Down** and **Connor** and **Dromore**, in proposing the next resolution, said that, in an assembly of practical men, it would be unnecessary, on his part, to bring forward any arguments with a view of recommending the resolution entrusted to him to propose. Indeed, the very able arguments of Mr. Adair would apply equally to this as to the resolution proposed by him, and all would concur in the statement, that it was necessary, if possible, to make this kingdom quite independent of any other as regarded the supply of flax. This course, in fact, might be made the more imperative by whatever steps would be taken as regarded the neutral Prussian ports, but independent of this very great reason, they should, for other reasons, endeavour to be independent as respected the growth of flax. He was pleased to perceive that the home-saved seed had succeeded well, and that it compared with advantage with foreign. In fact, every year it appeared to be getting better, and he believed that the flax grown from home-saved seed this year was superior to that produced any year before. That was sufficiently evidenced by the samples displayed upon the table, all of which he learned were grown from home-saved seed. He would not further trespass on his lordship's time, or on that of the meeting, but would move the resolution he had the honour of having confided to him.

Mr. W. **Charley**, Seymour-hill, stated, in seconding the report, that, had he been aware he was to have been called on at that meeting, he would have prepared a few statements to lay before the Society. He happened, as he was coming from home, to put in his pocket a copy of the Journal of the Society of Arts, which lately had given some accounts of experiments in Ireland, communicated by him, and which he intended giving to Mr. MacAdam. It might be interesting to mention a few of these experiments. He should state, before doing so, that he was written to by the Secretary of the Society of Arts, to get up some papers in connexion with flax, and when he had leisure he had sent a few, and continued to do so up to the present. The English were most anxious to grow flax, but they had no market for it, and Mr. Foster, Secretary of the Society already referred to, told him a singular anecdote illustrative of this state of things. His (Mr. Foster's) father grew a quantity of flax, but having no market for it, he did not well know what to do with it, and stored it up carefully. Ten years after, when Mr. Foster, senior, had died, his son, finding the flax, and not knowing how to dispose of it, used it to repair the roofs of his out offices—so that this valuable article was actually turned to the purposes of thatch. He stated this as an instance of the want of knowledge as to the value of flax that existed in England, and the want of accommodation for disposing of it. This Society had done a great deal of good; and he, in sending his papers forward, had endeavoured to call attention to the best modes of saving the fibre and the seed; but he thought that something also ought to be done by this Society, to give English growers information in that respect. In Norfolk, the people were well disposed to grow flax, but they could not expect men to grow an article which they could not find a market for. Mr. Charley here read some extracts from the paper he held in his hand, interspersing the passages with observations as to the uses to which the seed might be converted; he especially adverted to feeding, and reduction of seed to oil-cake, and he estimated the value for that purpose at £1 an acre. His landsteward had made some returns taking the expenses for grubbing, &c., and adding, rent, taxes, and seed, &c., he found that the expense on an acre was £9 15s. 10d. The return from the crop was £12 16s., so that there was a profit of £3 0s. 2d. on the acre. He considered this merely an average crop, and that amount realised on an average crop in an average year would be better than that realised by most other crops. Another account had been furnished by Mr. Coates, Malone, who, as his land was situated near to the town, charged £5 the Irish acre for rent, and he found that, deducting all expenses, his profit was £3 1s. 8d. on the statute acre. This was a very beneficial result, and though instances occurred in which £10, £15, and £20 of profit per acre had been realised, he thought that hopes should not be raised too high that might afterwards be disappointed, and that it was better to give the yield of an average crop. Reverting to the advantage of flax cultivation in England, he said that a large amount of fibre might be procured from England if the cultivation of the crop were introduced there. In his humble way he had been endeavouring to promote that object, and he hoped that eventually they would see large quantities of fibre brought over from that country. He had nothing further to add, but that he would have very great pleasure in giving all the assistance in his power to the Society in the object it had in view.

Mr. MacAdam would ask permission to make a few statements in reference to what fell from Mr. Charley. He thought that the amount of profit which Mr. Charley had stated was low, and his experience extending over a series of years convinced him that if Mr. Charley doubled the amount he would be much nearer to the mark. (Hear.) As to the value of the bolls, in his estimate £1, that was too low, and he believed it might be set down at £3. It was not quite correct to take one acre on a gentleman's farm and to calculate the average produce from that; and he would mention that accounts were taken of the produce of flax cultivated by 53 farmers the fibre of which was sold in Newry, and after deducting all expenses they found they had an average of £7 per Irish acre profit, or about £5 per statute acre.

Mr. Charley said he used the bolls for feeding purposes, but that probably the flax had not been rippled closely, and that much more could be got off. The produce was 30 bushels at 8d per bushel.

Mr. MacAdam—That is uncommonly small. Your crop was under an average, and your expenses are more than those of a working farmer. (Hear, hear.)

Mr. Charley—£3 an acre is not a bad profit. I am quite satisfied with that profit; but I would be happy if any gentleman realised more.

Mr. **MacAdam**—35 stones to the acre is the average produce, you had 29½ stones, or five-and-a-half under the average.

Some further conversation ensued, in the course of which Mr. S. K. Mulholland expressed his opinion that the produce stated was under the average, after which the resolution was put from the chair and carried.

Mr. J. J. **Richardson**, M.P., proposed the fifth resolution, and stated that it was quite unnecessary for him to dwell at any length upon it. The members of the Society, he was satisfied, were always willing to inspect and encourage any invention that was likely to improve the culture and manufacture of flax, at the same time that they had a duty to perform to the public, as standing between the public and the inventors, and were bound to investigate clearly any invention that was brought before them.

Mr. **George J. Clarke** seconded the resolution, giving the result of some experiments he had made in his district, and stating that there was an evident willingness on the part of the farmers to accede to the recommendations of the Society. He concurred in the opinion that Mr. Charley's return was low.

The resolution having been put from the chair passed.

Mr. **Fitzherbert Filgate** briefly proposed the next resolution, appointing the officers for the ensuing year.

Mr. **Gustavus Heyn** seconded the resolution, and, in doing so, passed a high encomium on the officers for the past year, to whom, if it were consistent with the usual order of the proceedings, he would propose a vote of thanks. (No.) He was fully aware of the attention they paid to the interests of the Society, and also of the labours of their worthy and energetic Secretary, who on every occasion had been not only most punctual in his duty at the meetings, but had also given valuable services by aiding them with his great knowledge and experience extending over a long series of years. (Hear.)

The motion was then put from the chair and adopted.

Mr. **Leadbetter** having been acquainted by the Chairman that the meeting was now ready to hear his statements, proceeded to state that he owed an apology to the members for occupying their attention at that late hour, and then proceeded to read from a written document to the effect, that in the transactions of the Society for 1852, a very favourable report was published, by a Special Committee appointed to make a strict investigation of Watt's patented system of flax preparation; that he had been requested* to make a statement of the progress of this system at the annual meeting for 1853; that details of some experiments he had then given, had been withheld by the Society, while other experiments of a precisely similar nature were inserted; that an article subsequently appeared in the *Dublin Industrial Journal* from Mr. MacAdam, in which opinions were expressed injurious to the system of Mr. Watt, and stating that the maceration used in that system was not sufficient, and that fermentation appeared to be absolutely necessary. Mr. Leadbetter then read a correspondence which had taken place between his firm and the Committee, and in an entry in the proceedings of the Committee, it was stated that the Committee begged to assure Messrs. Leadbetter that it was not by any means intended to do him any injustice, and that as regarded the article which appeared in the *Industrial Journal*, the Committee had no connexion whatever with it, or with any document which did not emanate directly from the Society itself, that the Committee were most anxious to encourage any system that would tend to improve the object they had in view.

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*Note.—The request referred to was made by an individual member of Committee, and not by that body officially.

Mr. **Campbell** said it was with the greatest reluctance he interfered; but he would ask Mr. Leadbetter's own good sense whether this was the proper place to investigate this case? The Committee had received him as gentlemen should receive another; and it was not becoming to come there and take up the time of a public meeting for an interested purpose. He would appeal to Mr. Leadbetter's own good sense.

Mr. **Leadbetter** said he had just done, and then proceeded to read a letter in reply to the minute already read, requesting an interview before making the matter public. This interview, he said had been granted, and he detailed the proceedings thereat. He proceeded to say, that obstacles had been thrown in the way of their system, and that an attempt had been made to crush it—(oh, oh)—notwithstanding that, being a new invention, it called for the support and encouragement of the Society. He begged, in conclusion, to place the matter before the Society and the public.

Mr. S. K. **Mulholland** said that as no other gentleman seemed willing to make a move he would take leave to refer to some matters in connexion with that just mentioned. One of the charges brought by Mr. Leadbetter was, that the Society had not done him justice. Now they should bear in mind that every man considered his own child best, and naturally so, and Mr. Leadbetter naturally looked very favourably on his plan and thought it better than any other. As the matter appeared to him he thought it had been satisfactorily disposed of on Wednesday last, when Mr. Leadbetter made his previous exposition to the Committee, and when he complained that in the printed proceedings of this Society something had been suppressed regarding his system. Mr. MacAdam, however, disposed of that to his (Mr. Mulholland's) satisfaction, he (Mr. MacAdam) having stated that the letter giving the preference to Mr. Leadbetter's system had been omitted from the Report, because there was another letter which gave the palm to Schenck's system, and that if one were published both should be published. (Hear.)

Mr. MacAdam—And both were from the same individual.

Mr. Mulholland proceeded—One letter could not properly be given without the other. (Hear, hear.) The question was much discussed, and from the satisfactory explanation given on Wednesday, the kind manner in which both Mr. Leadbetter and Mr. Watt were received by the Committee, and the assurances that were made to them that it was not the object of the Society to oppose any obstacle to or throw any difficulty in the way of any system that came before them, but to aid every good plan, he did not expect that the matter would be again brought forward to-day. The Society or the Committee were not in a position to approve of either Mr. Watt's or Mr. Schenck's system; they were not at present satisfied; and he could say for himself that he was very anxious to see gentlemen coming over here to introduce their systems, and would be glad even to see them spread into every parish and townland in the country. (Hear.) That was the sole object of the Committee; they were perfectly impartial and unpaid men. Many of them came to the meeting at great inconvenience to themselves, Mr. Crawford for instance, and if he could speak of the little he did he would mention himself—in fact all came at some trouble, some expense, and in this instance they were not prepared to find that charges would be brought against them. They had reason to think that, from the kind feeling manifested towards him, at their meeting on Wednesday, Mr. Leadbetter would not have brought his complaint on this occasion. It might prejudice the object of the Society if it were supposed that ground existed for these complaints, and it might create dissension. He thought that after the explanations that had been given, Mr. Leadbetter would have had the good sense to keep back at present, until he had seen that the Society were doing him a positive and palpable injury and injustice, which they were not doing him at this moment. On the part of the Committee he made these observations, as no other gentlemen had appeared to do so.

Mr. W. Sharman Crawford said, as chairman of the Committee Meeting on the occasion referred to, he could only remark, that his impressions were exactly similar to those so well expressed by his friend Mr. Mulholland. It was the sense of the Committee, and he, as their organ, endeavoured to convey it to Mr. Leadbetter, that the Committee had no idea of any partiality to any other system, or wished to do anything prejudicial to, or to injure in any respect, the particular system of any person which may have been proposed for the preparation of flax. That was the substance of what had been expressed by the meeting, and he did hope and believe, that Mr. Leadbetter would have been satisfied with it.

Mr. Leadbetter, in reply to Mr. Mulholland, would just mention that the letter of Mr. Kirkwood, of Canada, would have been worth publishing. He should remark also, that an article appearing from the Secretary of the Flax Society, would seem to have the sanction and express the opinion of the Society, and that it was, at least imprudent to write those articles prejudicial to a particular system, which, if it were good, would succeed despite all obstacles, and if bad would fall of itself.

Mr. MacAdam here rose, and begged to be permitted for a few minutes to reply to the statements of Mr. Leadbetter, which, though apparently in some respects directed against the Committee, were aimed at him. This was the first time since he had been appointed in 1844, that any complaint had been made against him, or exception taken to his conduct. He had done, and had always endeavoured to do his duty with strict impartiality, which was a very difficult thing; and with regard to the different inventions brought before the Society, there was scarcely one, the inventor of which, as Mr. Mulholland said, had not thought his own the best, and felt himself aggrieved if it were not pronounced so. (Hear.) With respect to his (Mr. MacAdam's) conduct in this particular instance, the first complaint against him was, that an article appeared in the *Dublin Journal of Industrial Progress*, in which it was stated he made remarks objecting strongly to this system. That article he wrote, not in the capacity of Secretary to the Royal Flax Society—(hear, hear)—but in his private capacity as he had a perfect right to do, at the request of Professor Sullivan; and in it he gave short notices of the different systems which had been introduced for the purpose of preparing flax, stating the peculiarities of each fairly, Mr. Leadbetter took neither a proper nor a fair advantage, by quoting only a few lines, two or three, of the article in question; and if he had gone further, and quoted more, or if any gentleman then present had an opportunity of reading the reference to Mr. Watt's system in full, it would be perceived that the article was anything but an attack upon that system. He stated what was his opinions at the time with regard to the system—opinions which he had the fullest opportunity of forming, and which he conceived himself warranted in stating. (Hear.) Gentlemen frequently came to him who had an intention of embarking capital in these pursuits, and asked his candid opinion as to the best system to adopt; and upon these occasions he had always answered fully and impartially, giving not only the merits but the demerits of each. (Hear.) He did not remember that he ever pronounced a hostile opinion of Mr. Leadbetter's or of Mr. Watt's system, but he did say that he thought Schenck's superior. He regretted that these matters were brought forward; it was a new position for him to occupy, an unusual circumstance to have statements made against him, and he regretted it the more because he had always entertained a feeling of high respect for Mr. Leadbetter. But he did not believe that he could be said to have ever done an injury to him or to any other person; what he had done was solely with a view to the advantage of the public, and it was not only ungenerous but unjust on the the part of Mr. Leadbetter by selecting these few expressions to make it appear that he had either spoken or written unfairly of him.

The matter then dropped; and on the motion of Mr. A. S. Adair, seconded by Mr. J. Temple Reilly, the Marquis of Downshire vacated the chair, which was taken by the Lord Bishop.

On the motion of Mr. A. S. Adair, seconded by Mr. Mulholland, the thanks of the meeting were presented to the Noble Marquis, not only for his conduct on that occasion, but for the unceasing interest taken by him, as President of the Society, in promoting its interest and prosperity.

The Lord Bishop presented the thanks of the meeting, which the Noble Marquis acknowledged, pledging himself to continued exertions towards the prosperity of the Society.

The proceedings then terminated.

The following reports on the progress of flax cultivation in the West Riding of Cork, were forwarded by Viscount Bernard, M.P., but arrived too late to be read to the meeting:—

" *Bandon, 30th October*, 1854.

" My Lord and Gentlemen,—It is now my pleasing duty to congratulate the members of the Bandon Flax Association, on the amount of success which has attended their labours, for the promotion and improvement of the growth of flax in this district.

" They have not only the pleasing reflection that flax grown at Castle Bernard, obtained the first prize last year, at Killarney National Show, and flax grown and exhibited by Mr. Shaw, of Bandon, at the National Show lately held in Armagh, obtained the second premium, although there were 22 competitors—but that the crops of this year, with very few exceptions, has been exceedingly good, and, in many instances, better than any which I have seen in the best cultivated districts of the North.

" In almost every instance where the farmer has already disposed of the crop, he feels satisfied with the return from it, the prices having been considerably over that of last years, partly owing to the superior crop, and partly to the competition between Mr. Smyth, proprietor of the Knock Flax Factory, and Mr. Shaw, of the Bandon Flax Factory.

" Those gentlemen having in the latter end of July, bought up all the large lots of flax they could obtain while growing, at prices varying from £6 to £9 per statute acre, and taking upon themselves all the labour and management.

" There has also been a market opened at each of the Factories for the purchasing of flax straw, which has been steeped and dryed, and also for flax which has been properly saved in the green state, with the seed on,—the prices for which, I am led to believe, are remunerative, if I may judge from the number of applications which have already been made to me for the purpose of selecting soil for the next year's crop.

"The improvement which has taken place in the steeping and general management among many of the largest growers is very satisfactory, and in several instances which have come under my own observation, the parties will realise from £2 to £3 per acre (from that circumstance alone,) over the prices of last year.

"I may now say that the flax harvest is almost complete, and the crop not only good, but has been well saved, as the high prices which it is bringing, are a strong evidence; and, I have every reason to believe, that the Bandon flax will maintain the high position which it now holds, at the next National show of the Dublin Society, and, perhaps, before then, attract some notice in the Paris Exhibition of 1855, for which we are now getting up some samples.

"D. J. BOYLE,
Practical Instructor of the 'Royal Society for the Promotion and Improvement of the Growth of Flax in Ireland.'

"To Viscount Bernard, M.P., and the Committee of the Bandon Flax Association."

"REPORT OF THE BALLINEEN FLAX SOCIETY.

"The progress of flax culture in the Ballineen district has been, during the season (1854), progressive.

"Remunerating prices have been obtained by the farmers for the flax they have grown, and many have reserved their stock for the flax market, which is intended to be held in the month of January, in expectation of advancing prices. It may be considered that the cultivation of flax is now a part of the agricultural system pursued by the farmers who have joined the Ballineen Flax Association, and that with due attention further improvements may be carried out. For this object the appointment of a resident Instructor would be eminently useful.

"The flax scutching mills of Knocks and Clobane, are in full operation, and buyers from Liverpool have made large purchases at the latter mill."

RESOLUTIONS.

At the Fourteenth Annual General Meeting, held in the Chamber of Commerce, Belfast, on Friday, 24th November, 1854,

The Marquis of Downshire, *President, in the Chair*,

The Annual Report of the Committee and Statement of Accounts, having been read, the following Resolutions were unanimously agreed to:—

Moved by William Sharman Crawford, Esq., D.L., J.P., seconded by John Roberts, Esq., and resolved—

"I. That the Annual Report and Statement of Accounts, now read, be received and adopted, and that they be printed for circulation, with such other information as the Committee may select."

Moved by the High Sheriff of Down, seconded by S. K. Mulholland, Esq., J.P., and resolved—

"II. That each successive year's experience demonstrates, still more, the importance of the Society's objects, and that the Committee shall continue to labour, as hitherto, towards their attainment."

Moved by Alexander Shafto Adair, Esq., M.P., seconded by R. Perceval Maxwell, Esq., J.P., and resolved—

"III. That the effects of the Russian war strikingly corroborate the Society's views as to the great advantage of increasing the home production of the raw material of the linen manufacture; while it is, on every hand, evident that results, beneficial to all sections of the community, would arise from the cessation of the large yearly sums which this manufacture has hitherto paid to Russia."

Moved by the Lord Bishop of Down and Connor, seconded by William Charley, Esq., and resolved—

"IV. That the saving of the seed of the Irish flax crop,—a subject at all times of great importance,—has, this year, been even more urgent, from the chance of a decrease or cessation of the supplies from Russia."

Moved by J. J. Richardson, Esq., M.P.; seconded by G. J. Clarke, Esq., J.P., and resolved—

"V. That all inventions, tending to improve the steeping and scutching of flax, shall continue to receive the earnest attention of the Committee."

but it must be understood, that it is only after oats following a green crop or old lea, and never after two or three succeeding crops of oats, which bad practice still prevails in some districts. It is a very general error among farmers, to consider it necessary that flax should follow a potato crop. Except on very poor soils, a better crop will be produced after grain, and the double profit of the grain and flax secured. If old lea be broken up, and potatoes planted, followed by a grain crop, a very fine crop of flax may be obtained in the ensuing year.

PREPARATION OF THE SOIL.

One of the points of the greatest importance, in the culture of flax, is by thorough draining, and by careful and repeated cleansing of the land from weeds, to place it in the finest, deepest, and cleanest state. This will make room for the roots to penetrate, which they will often do to a depth equal to one-half the length of the stem above ground.

After wheat, one ploughing may be sufficient, on light friable loam, but two are better; and, on stiff soils, three are advisable—one immediately after harvest, across the ridges, and two in Spring, so as to be ready for sowing in the first or second week of April. Much will, of course, depend on the nature of the soil, and the knowledge and experience of the farmer. The land should be so drained and subsoiled, that it can be sown in flats, which will give more even and much better crops. Subsoiling should not be done at a less interval than two years prior to the flax crop. This gives the land time to consolidate. But, until the system of thorough-draining be general, it will be necessary, after oats, to plough early in Autumn, to the depth of six or eight inches. Throw the land into ridges, that it may receive the frost and air; and make surface drains to carry off the rains of Winter. Plough again in Spring, three or four inches deep, so as to preserve the Winter surface for the roots of the flax. The Spring ploughing should be given some time before sowing, to allow any seeds of weeds in the land to vegetate, and the harrowing in of the flaxseed will kill them, and save a great deal of after weeding. Following the last harrowing it is necessary to roll, to give an even surface and consolidate the land, breaking up this again with a short-toothed or seed-harrow, before sowing, which should be up and down, not across the ridges or anglewise:

SOWING.

The seed best adapted for the generality of soils is Riga, although Dutch has been used, in many districts of country, for a series of

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ploughed and harrowed in with two cwt. guano and two cwt. gypsum; then sown with rape. 3. Potatoes or turnips, well manured. 4. Wheat, sown in Spring, with clover and rye-grass. 5. Hay and clover. 6. Grazing. 7. Oats. 8. Flax and Winter vetches; guano as before mentioned. 9. Turnips, well manured. 10. Barley, sown with rye-grass and clover. 11. Clover and hay. 12. Grazing. 13. Oats.

years with perfect success. American seed does not generally suit well, as it is apt to produce a coarse, branchy stem. If used, it should be on deep, loamy soils. In buying seed, select it plump, shining, and heavy, and of the best brands, from a respectable merchant. Sift it clear of all the seeds of weeds, which will save a great deal of after trouble, when the crop is growing. This may be done by fanners, and through a wire sieve, twelve bars to the inch. Home-saved seed has produced such excellent crops, of late, that it is strongly recommended that every farmer should only sow, each year, as much foreign seed as would produce a sufficient quantity, for his flax crop of the following season.* The thinner portion of the crop would be the best for this purpose, as, when flax grows thin, it produces much seed. This plan, besides the saving effected in the price of foreign sowing seed, would effectually secure the farmer from any danger of loss from fraudulently made-up seed. It will be best, in most cases, to use the seed which is saved from this, in the following year, for feeding, or to sell it for the oil mills, although it often produces good crops. The proportion of seed may be stated at three-and-a-half imperial bushels to the Irish or Plantation acre, and so on, in proportion to the Scotch or Cunningham, and the English or Statute acre. It is better to sow too thick than too thin; as, with thick sowing, the stem grows tall and straight, with only one or two seed capsules at the top; and the fibre is found greatly superior, in fineness and length, to that produced from thin-sown flax, which grows coarse, and branches out, producing much seed, but a very inferior quality of fibre. The ground being pulverised and well cleaned, roll and sow. If it has been laid off without ridges, it should be marked off in divisions, eight to ten feet broad, in order to give an equable supply of seed. After sowing, cover it with a seed harrow, going twice over it—once up and down, and once across or anglewise; as this makes it more equally spread, and avoids the small drills made by the teeth of the harrow. Finish with the roller, which will leave the seed covered about an inch—the proper depth. The ridges should be very little raised in the centre, when the ground is ready for the seed, otherwise the crop will not ripen evenly; and, when land is properly drained, there should be no ridges. The sowing of clover and grass seeds along with the flax, is not advised, when it can be conveniently avoided, as these plants always injure the root ends of the flax. But carrots may be sown, in suitable soils, in drills, so that the person pulling the flax may step over the rows, which may be afterwards hoed and cleaned, and should have some liquid manure. A stolen crop of rape or Winter vetches, or of turnips of the stone or Norfolk globe varieties, may be taken, after the flax is pulled. Rolling the ground after sowing is very advisable, care being taken not to roll when the ground is so wet that the earth adheres to the roller.

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*The produce of seed averages about 12 bushels the Statute acre, so that the seed saved off one Statute acre would sow about five.

MANURE FOR THE FLAX CROP.

Recent chemical investigations have shewn that the fibre of flax does abstract from the soil certain matters, although not in so large a proportion as several other commonly cultivated crops. To supply to the soil all the matters which the plant requires, with the exception of what is obstructed by the seed, which should be returned by saving the latter, and applying the manure of the cattle fed upon it, or an equivalent if the seed be sold, so as to leave the land in the same state of fertility as before, the following compound has been proposed by Professor Hodges, as a manure, which may be sown broadcast on the land, prior to the last harrowing before sowing the flaxseed:—

FOR A STATUTE ACRE OF LAND.

		s.	d.
Muriate of Potash, 30 lbs., ...	cost about	3	0
Chloride of Sodium (common salt), 28 lbs.,	"	0	3
Burned Gypsum, powdered, 24 lbs., ...	"	0	6
Bone Dust, 54 lbs., ...	"	3	3
Sulphate of Magnesia (Epsom Salts), 56 lbs.,	"	4	0
		11	0

WEEDING.

If care has been paid to cleaning the seed and the soil, few weeds will appear; but if there be any, they must be carefully pulled. It is done in Belgium by women and children, who, with coarse cloths round their knees, creep along on all-fours. This injures the young plant less than walking over it (which if done, should be by persons whose shoes are not filled with nails). They should work, also, facing the wind, so that the plants laid flat by the pressure may be blown up again, or thus be assisted to regain their upright position. The tender plant, pressed one way, soon recovers; but, if twisted or flattened by careless weeders, it seldom rises again.

PULLING.

The time when flax should be pulled is a point of much nicety to determine. The fibre is in the the best state before the seed is quite ripe. If pulled too soon, although the fibre is fine, the great waste in scutching and hackling renders it unprofitable; and if pulled too late, the additional weight does not compensate for the coarseness of the fibre. It may be stated, that the best time for pulling is, when the seeds are beginning to change from a green to a pale brown colour, and the stalk to become yellow, for about two-thirds of its height from the ground. When any of the crop is lying, and suffering from wet, it should be pulled as soon as possible, and kept by itself. So long as the ground is undrained, and imperfectly levelled before sowing, the flax will be found of different lengths. In such cases, pull each length separately, and steep in separate pools, or keep it separate in the same pool. Where there is much second growth, the flax should be caught by the puller just underneath the bolls, which will leave the short stalks behind. If the latter be few, it is best not to pull them at all, as the loss from mixture and discolouration by weeds would counterbalance the profit. If the ground has been thorough-drained, and laid out evenly, the flax will be all of the same length. It is most essential to take time and care to keep the flax even, like a brush, at the root ends. This increases the value to the spinner, and, of course, to the grower, who will be amply repaid, by an additional price for his extra trouble. Let the handfuls of pulled flax be laid across each other diagonally, to be ready for the

RIPPLING,

Which should be carried on at the same time, and in the same field, with the pulling. If the only advantage to be derived from rippling was the comparative ease with which rippled flax is handled, the practice ought always to be adopted; but, besides this, the seed is a most valuable part of the crop, being worth, if sold for the oil mill, £3 per acre, and if used for feeding stock of all kinds, at least £4 per acre. The apparatus is very simple. The ripple consists of a row of iron teeth screwed into a block of wood. This can be procured in Belfast, or may be made by any handy blacksmith.* It is to be taken to the field, where the flax is being pulled, and screwed down to the centre of a nine-feet plank, resting on two stools. The ripplers may either stand or sit astride at opposite ends. They should be at such a distance from the comb as to permit of their striking it properly and alternately. A winnowing sheet must be placed under them, to receive the bolls as they are rippled off; and then the ripplers are ready to receive the flax just pulled, the handfuls being placed diagonally, and bound up in a sheaf. The sheaf is laid down at the right hand of the rippler, and untied. He takes a handful with one hand, about six inches from the root, and a little nearer the top with the other. He spreads the top of the handful like a fan, draws the one-half of it through the comb, and the other half past the side; and, by a half-turn of the wrist, the same operation is repeated with the rest of the bunch. Some, however, prefer rippling without turning the hand, giving the flax one or two pulls through, according to the quantity of bolls. The flax can often be rippled without being passed more than once through the comb. He then lays the handfuls down at his left side, *each handful* crossing the other, when the sheaf should be carefully tied up and removed. The object of crossing the handfuls so carefully, after rippling, when tying up the beets for the steep is, that they will part freely from each other, when they are taken to spread out on the grass, and not interlock, and be put out of their even order, as would otherwise be the case. If the weather be dry, the bolls should be kept in the field, spread on winnow-cloths, or other contrivance for drying; and, if turned from time to time, they will win. Passing the bolls first through a coarse riddle, and afterwards through fanners, to remove straws and leaves, will facilitate the drying. If the weather be moist, they should be taken in-doors, and spread out thinly and evenly on a barn floor, or on a loft, leaving windows and doors open, to allow a thorough current of air, and turned twice a-day. When nearly dry, they may be taken to a corn kiln (taking care not to raise it above Summer heat), and carefully turned, until no moisture remains. By the above plan of *slow* drying, the seed has time to imbibe all the juices that remain in the husk, and to become perfectly ripe. If it be taken at once from the field, and dried *hurriedly* on the kiln, these juices will be burned up, and the seed will become shrivelled and parched, little nutritious matter remaining. In fine seasons, the bolls should always be dried in the open air, the seed thrashed out, and the heaviest and plumpest used for sowing or crushing. The light seeds and chaff form most wholesome and nutritious feeding for cattle. Flax ought not to be allowed to stand in the field, if possible, even the second day; it should be rippled as soon as pulled, and carried to the water as soon as possible, that it may not harden.

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*The best ripples are made of half-inch square rods of iron, placed with the angles of iron next the ripplers, 3-16ths of an inch asunder at the bottom, half-an-inch at the top, and 18 inches long, to allow a sufficient spring, and save much breaking of flax. The points should begin to taper 3 inches from the top.

WATERING.

This process requires the greatest care and attention. River water is the best. If spring water has to be used, let the pond be filled some weeks or months, if possible, before the flax is put in, that the sun and air may soften the water. That containing iron or other mineral substances should never be used. If river water can be had, it need not be let into the pond sooner than the day before the flax is to be steeped. The best size of a steep pool is 12 to 18 feet broad, and 3½ to 4 feet deep. Place the flax loosely in the pool, in one layer, somewhat sloped, and in regular rows, with the root end underneath; the tie of each row of sheaves to reach the roots of the previous one; cover with moss sods, or tough old lea sods, cut thin, laid perfectly close, the sheer of each fitted to the other. Before putting on the sods, a layer of rushes or ragweeds is recommended to be placed on the flax, especially in new ponds. As sods are not always at hand, a light covering of straw may do, with stones laid on it, so as to keep the flax just under the water; and as the fermentation proceeds, additional weight should be laid on—to be removed as soon as the fermentation ceases, so as not to sink the flax too much in the pool. Thus covered it never sinks to the bottom, nor is affected by air or light. A small stream of water allowed to run through a pool has been found to improve its colour. In this case, if the pools are in a line, the stream should be conducted along the one side, and run into each pool separately, and the water of each pool run off, along the opposite side, in a similar manner. It will be sufficiently steeped, in an average time, from eight to fourteen days, according to the heat of the weather and the nature of the water. Every grower should learn to know when the flax has had enough of the water, as a few hours too much may injure it. It is, however, much more frequently *under*-watered than *over*-watered. The best test is the following:—Try some stalks of average thickness, by breaking the *shove*, or woody part, in two places, about six or eight inches apart, at the middle of the stalk; catch the broken bit of wood, and if it *will pull freely out, downwards, for that length, without breaking or tearing the fibre, and with none of the fibre adhering to it*, it is ready to take out. Make this trial every six hours, after fermentation subsides, for sometimes the change is rapid. Never lift the flax roughly from the pool, with forks or grapes, but have it carefully handed out of the flax drain by men standing in the water. It is advantageous to let the flax drain twelve to twenty-four hours, after being taken from the pool, by placing the bundles on their root ends, close together, or on the flat, with the slope; but the heaps should not be too large, otherwise the flax will be injured by heating.

There are two new systems of steeping or retting flax, on a large scale, now in operation. The one is by hot water, or what is called Schenck's method; and the other by steam or Watt's method. In both cases they are carried on, on a large scale, by persons who purchase the flax straw from the farmers, as pulled and dried on the Courtrai system (see page 45). Both plans are protected by patents, and authorization to adopt them must be had of the patentees.*

SPREADING.

Select, when possible, clean, short, thick pasture ground for this operation; and mow down and remove any weeds that rise above the surface of the sward. Lay the flax evenly on the grass, and spread thin and very equally. If the directions under the head of rippling have been attended to, the handfuls will come readily asunder, without entangling. Turn it two or three times while on the grass (with a rod about eight feet in length, and an inch and a-half in diameter), that it may not become of different shades, by the unequal action of the sun, which is often the case, through inattention to this point. Turn it when there is a prospect of rain, that the flax may be beaten down a little, and thus prevented from being blown away.

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* By addressing a communication to Messrs. Bernard & Koch, Cregagh Flax Works, Belfast, terms for Schenck's system may be ascertained, with full particulars of the apparatus required; and, for terms and particulars of Watt's method, address Messrs. J. Leadbatter & Co., Bedford-street, Belfast.

LIFTING.

Six to eight days if the weather be showery, or ten to twelve if it be dry, should be sufficient on the grass. A good test of its being ready to lift is, to rub a few stalks from the top to the bottom; and, when the wood breaks easily, and separates from the fibre, leaving it sound, it has had enough of the grass. Also, when a large proportion of the stalks are perceived to form a *bow and string* from the fibre constructing and separating from the woody stalk. But, the most certain way is, to prove a small quantity with the hand-break or in a flax mill. In lifting, keep the lengths straight and the ends even, otherwise great loss will occur in the rolling and scutching. Let it be set up to dry for a few hours, and afterwards tie it up in small bundles ; and, if not taken soon to be scutched, it will be much improved by being put up in small stacks loosely built, with stones or brambles in the bottom to keep it dry, and allow a free circulation of air. Stacks built on pillars would be the best.

DRYING,

By fire, *is always most pernicious.* If properly steeped and grassed no such drying is necessary ; but, to make it ready for breaking and scutching, exposure to the sun is sufficient. In some districts it is put to dry *on kilns*, in a damp state, and is absolutely burned before it is dry, and the rich oily appearance of the flax is always greatly impaired. On this point the Society can scarcely speak too strongly, as the flax is either destroyed or rendered not worth one-half of what it would be if properly prepared.

BREAKING AND SCUTCHING,

If done by hand, should be on the Belgian system, which is less wasteful than that practised in Ireland. If by milling, the farmer will do well to select those mills in which the improved machinery has been introduced. The Society would also recommend that the farmer should endeavour to have his flax scutched by a mill-owner who pays his men by the day, and not by the stone, even if it should cost him higher in proportion; the system of paying the scutchers by the stone rendering them more anxious to do a large quantity in the day than to produce a good yield from the straw.

THE COURTRAI SYSTEM.

This is the mode in which flax should be saved for steeping on Schenck's or Watt's patent systems. It requires to be very carefully done, as inattention will reduce the value of the straw, and yield inferior fibre. When made up for drying, in large sheaves, the straw is much injured, the outside stalks being much discoloured by the heat of the sun before the inside of the sheaf is dry. The flax stems should be put together in bunches, about one-half larger than a man can grasp in one hand, spread a little, and laid on the ground in rows after each puller; the bunches laid with tops and roots alternately, which prevents the seed-bolls from sticking to each other in lifting. It should be stooked as soon after pulling as possible, and never allowed to remain over night unstooked, except in settled weather. The stooking should go on at the same time as the pulling, as, if flax is allowed to get rain while on the ground its colour is injured. A well-trained stooker will put up the produce of a Statute acre, or more, in good order, in a day, with two boys or girls to hand him the bunches. The flax should be handed with the tops to the stooker. The handfuls, as pulled, are set up, resting against each other—the root ends spread well out, and the tops joining like the letter A. The stooks are made eight to ten feet long, and a short strap keeps the ends firm. The stooks should be very narrow on the top, and thinly put up, so that they may get the full benefit of the weather. In six or eight days at most, after being pulled, the flax should be ready for tying up in sheaves of the size of corn sheaves. It is then ricked, and allowed to stand in the field until the seed is dry enough for stacking. To build the rick, lay two poles parallel on the ground about a foot asunder, with a strong upright pole at each end. The flax is then built, the length of a sheaf in thickness or breadth. The bottom poles should be laid North and South, so that the sun shall get at both sides of the rick during the day. In building, the sheaves should be laid tops and roots alternately, built seven to eight feet high, and finished on the top by laying a single row of sheaves lengthwise, or across the others, and then another row as before, but with the tops all the same way, which gives a slope to throw off rain, and finished by putting on the top a little straw, tied with a rope. In this way, if properly built, it will stand secure for months. It can be staked at leisure, or put in a barn, the seed taken off during the Winter, and the flax steeped in the following May; or it may be kept stacked, without receiving any injury, for two or three years or even longer

MR. WARNES'S (OF TRIMINGHAM) SYSTEM OF BOX FEEDING.

SUMMER.—Rye-grass and clover, or any other green crop, cut into chaff of about an inch long, with the addition of ground linseed made into compound. WINTER.—Seven-eighths straw—one-eighth hay, with turnip tops or wurzel leaves cut into chaff, with the addition of linseed as above. *To make the compound*, fill the furnace with water to within six inches, and, when boiling, strew by hand one-fifth of linseed meal to four-fifths of water, a boy stirring the meal in, till it is well mixed—(damp the fire); let the mucilage simmer about five or six inches, when it will become a strong jelly. Into a large tub put about three bushels of the chaff, adding enough of the mucilage to wet it; mix and ram well down, then add more chaff, &c., mixing and ramming down every three baskets. The compound is then covered over, and in about two hours the mucilage, being obsorbed by the chaff, may be given to the cattle. If it is wished to *push the cattle on*, sprinkle a small proportion of the meal of barley, or other corn, upon which layer of the chaff and mucilage, also Swedish turnips, carrots, or wurzel, cut small, may be added, to give the compound a flavour. Altogether, the above compound will be found, at the present juncture, extremely economical for *fattening*, rearing, or maintaining store stock. DIRECTIONS FOR FEEDING. SUMMER.—*(At Five in the Morning and Three in the Afternoon.)*—Give each beast about half-a-bushel of the compound, feeding the remainder of the day with chaff. Water once a-day. WINTER.—*(Morning, Five o'clock.)*—Begin with half-a-peck of the compound to each beast; continue this food till the beasts are nearly satisfied. *(At Seven and Nine.)*—Feed with half-a-bushel of cut Swedish turnips to each, at twice. *(Eleven.)*—A feed of the compound. *(Afternoon, at One and Three.)*—As many Swedes as the beast will eat, *a little at a time*. *(Six.)*—A good feed of compound, leaving for the night. The boxes or sheds in which the cattle are kept must be sparingly littered twice-a-day, and cleaned out when full. Food to be given a *little* at a time. UTENSILS.—An iron furnace, to hold forty gallons; an iron stirrer (like a mashing stick); an iron bowl, with a handle; a linseed crusher—tub or stone cistern of about 100 gallons—wooden rammer; a bushel basket—chaff cutter—turnip cutter; a fork, with four flat prongs; a common bucket, with iron handle; a skip or box to hold about a peck; a bin, with partitions for linseed before and after crushing. In fixing the boiler, it should have a curb of wood, six inches deep, sloping back; this will prevent the mucilage boiling over. [For directions to make compound of grain, and other particulars, see Mr. Warnes's book, to be had of all booksellers.]

EXTRACTS

FROM THE MINUTES OF

MONTHLY COMMITTEE MEETINGS

FROM 1st NOVEMBER, 1853, TO 1st NOVEMBER, 1854.

30*th November*, 1853.

Mr. Niven reported on his experiments with the white-flowered flax, (Continental variety). It was sown 4th May,—7½ ounces, or ½ pint of seed, and pulled 13th August, when it averaged 34 inches in length, and the plants weighed, green, 65lbs. 27lbs. were steeped in cold water, and wet-rolled after steeping. After drying on the spread ground, it weighed 5lbs. 8 ounces, and the yield of fibre, after scutching, was 12½ ounces, or 14 per cent. The remaining 38lbs. of plants were sent to Messrs. Leadbetter, and put through Watt's process. When dried they weighed, with the seed-bolls, 12lbs. 7½ ounces, which yielded 13 ounces clean seed, 12 ounces chaff of bolls, and 9lbs. 14 ounces straw. The latter, after being steeped on Watt's process, weighed, when dried, 5lbs. 4 ounces, and yielded 1lb. 5 ounces scutched fibre, or 25 per cent. When hackled, the first lot gave at the rate of 57lbs. 3 ounces, dressed line, per cwt. of fibre, and the second, 59lbs. 7 ounces, and 60lbs. 9 ounces. All were estimated to spin 90 lea to 100 lea yarn.

29*th December*.

A communication from M. Terwangne, of Lille, stated that he had invented a scutching machine capable of cleaning 6 cwt. of flax, in ten hours, at a cost of £4 per ton of fibre.

A letter from Mr. Davy, of Crediton, Devonshire, inclosing samples of bleached yarn and linen, prepared by him, by chemical means, from unsteeped fibre obtained for Mr. Roche, M.P., County Cork.

25th January, 1854.

A communication from Messrs. Lawson & Sons, of Leeds, stating that their scutching machine had been much improved, and was capable of cleaning 30 stones of fibre, daily, with the labour of 12 boys. Also, that they had established a rettery where the flax was steeped in tanks filled with the waste water from a condensing steam-engine. They had sold fibre, so prepared, at £70 to £90 per ton.

Notification of a flax society having been formed at Leeds, and £200 raised by subscription, to be distributed in prizes for Yorkshire-grown flax.

A letter from Mr. Burton, of Eye, Suffolk, who stated that he had introduced great improvements in the hot water steeping process, avoiding all out-door and artificial drying, and bringing the fibre direct from the vat to the scutch-mill; that he had sold fibre, so treated, at £80 per ton.

A communication from Mr. E. A. Delius, of Bielefeld, Prussia, relative to a new mode of steeping, the invention of M. Reuter, of Vienna. He artificially heats the air in the building where the vats are placed, so that the temperature of the water is maintained at 68° to 75° (Fahrenheit); the yield of fibre is stated to be 50 to 100 per cent. greater than the other modes of steeping. Six retteries, on this plan, were about to be established by public companies, and four others by private individuals, in Austria.

A letter from Mr. A. Marshall, of Leeds, with various samples of flax fibre, before and after treatment, by Jennings's process, and a note of the increased value imparted to the fibre by it, say £9 to £12 per ton, after allowing for loss in weight. The total cost of the operation estimated at £4 per ton. Messrs. Marshall is prepared to give licenses for working the process.

1st March.

Specimens of the fibre obtained from the *Calatropus gigantea* and the *Bœhmeria nivea*, forwarded by the Hon. East India Company, in order to ascertain their suitability for textile manufactures.

Notice given by the New Zealand Company, of a prize of £50 for a machine capable of scutching the fibre of the *Phormium tenax*, (New Zealand flax). Samples accompanying it.

1st April.

Samples exhibited of coarse yarn and woven fabric, made from the fibre of the Bokhara clover *(Melilotus arborea)*. Some seed also received, which was distributed among members of the Society for trial.

28th April.

Sub-Committee reported upon a trial made of Wilson's scutching machine, in comparison with the ordinary scutch-mill of Messrs.

Walker, Tullygirvan. Two lots of steeped flax-straw were selected, the one being under-watered, and the other very fully watered. Of each kind, 10lbs. were weighed off for the mill, and the same quantity for the machine. The results were as follow :—1st lot, coarse straw, under-watered; Mr. Wilson's machine—yield of fibre, 1lb. 12 ounces; time, 22 minutes. Messrs. Walker's mill; yield of fibre, 1lb. 12 ounces; time, 9¼ minutes. 2d lot, fine straw, fully watered; Mr. Wilson's machine—yield of fibre, 2lbs. 8 ounces; time, 20 minutes. Messrs. Walker's mill—yield of fibre, 2lbs. 7½ ounces; time, 16 minutes. The average quantity done, on the two lots, was equal to about 65lbs. in the twelve hours. The first lot was scarcely so well cleaned by the machine, as by the mill. The second lot was quite as well done. The time stated did not include the rolling for the mill; the machine scutched the straw without rolling. With the first lot, in the mill, two scutchers were occupied all the time; with the second, two for ten minutes, and one for six minutes. The machine was worked, throughout, by two boys.

31*st May.*

Several letters were read relative to a new variety of flax, grown in the State of Ohio, United States of America, with small packets of the seed, which was of a greenish, yellow colour. This variety was said to yield a fibre of superior quality, and to give twice the quantity of seed obtainable from the blue flowered kind. From the light colour of the seed, it was stated that the oil made from it is much clearer than ordinary linseed oil, and suitable for purposes to which the latter is not applicable. The seed was distributed among members of the Society for trial.

26*th July.*

A letter from Mr. Turnbull, of Dundee, intimated that he had invented a process of preparing flax fibre, by which he could produce a coarse quality in three hours, and a fine quality in three days. Samples, accompanying the letter, appeared very strong, and suitable for spinning. He stated the yield of fibre to be 18lbs. to 20lbs. from 100lbs. of dried straw.

Mr. Niven produced samples of flax straw, the produce of the Ohio variety of seed. Other samples of the ordinary kind, were shown to demonstrate that it was practicable to grow good flax from seed saved from plants pulled before maturity. He had, last year, sown Riga seed, and pulled the crop when 100 days in the ground. The stems were dried, and although the seed, when the plants were pulled, was only just formed, it filled with the sap of the stems, and ripened sufficiently to be sown this year, and the stalks produced showed that it was capable of raising a fair quality.

A report was made of a communication received by the Cornice Agricole, of Lille, France, relative to a disease observed in the flax plant. It appears just at the flowering period, the leaves blacken and fall off, crumbling to dust, when rubbed between the fingers. The stems become yellow, and the flower does not expand. The fibre is greatly deteriorated and the yield of seed is almost nothing. It is generally believed that this disease is to be attributed to the plant degenerating where the seed has not been often enough changed. Parasitic fungi, of the genus *Phoma*, accompany the other manifestations of the disease. Soil recently limed appears to be more subject to this disease.

26th October.

A letter from Mr. Nelson, of Selby, Yorkshire, intimated that he had invented a scutching machine, which would clean 60 stones of fibre, daily, requiring only four to six boys or women to attend it, and one horse power to drive it.

EXPERIMENTS

WITH AND WITHOUT MANURES.

It being desirable that experiments should be made to ascertain the value of manures as applied to the flax crop, the almost universal practice in Ireland being to sow it without manure, while in Belgium manure is equally universally applied, the Committee were fortunate in obtaining the co-operation of Dr. Kirkpatrick, Inspector of Agricultural Schools and Model Farms to the National Board of Education, who kindly arranged that these experiments should be carried out on three Model Farms, those of Glasnevin, in the environs of Dublin, Derrycastle, in County Tipperary, and the Munster Model Farm, at Cork.

It was decided that two kinds of manure should be employed, viz., guano, and the compound recommended by Professor Hodges, from an analysis of the flax plant. It was also arranged that some flax should be laid down, beside them, without any application of manure.

The following reports to Dr. Kirkpatrick, from the persons in charge of the three Model Farms, may tend to throw some light on the subject :—

"*Glasnevin Model Farm*, 8*th August*, 1854.

"Four samples of Riga flax, sown on 4th May, and pulled—merely as samples—on 7th August.

"No. 1 occupied an area of one rood statute measure, and was manured at time of sowing with a mixture consisting of 7lbs. common salt and 21lbs. of ground bones. On 19th June the crop got a top-dressing composed of 11lbs. Muriate of Potash, 25lbs. Sulphate of Ammonia, and 9lbs. Epsom Salts. Owing to the circumstance that the ground was not cultivated in the foregoing year, in consequence of the performance of work connected with the new buildings, chickweed prevailed to a large extent, and very materially injured the crop. The sample now presented, therefore, does not give an average of the crop, as it was taken from the best part of it. It seems however to be the best of the four samples forwarded. It may be also remarked, that, from observations made from time to time on the growth of the flax grown on this plot, it would appear that some of the ingredients of the manures applied retarded its vigorous growth, and thus permitted the encroachment and ultimate mastery, to a great extent, of the injurious weed mentioned.

"No. 2 occupied the same extent of ground as No. 1 (1 rood), and was grown adjacent to it, on the same land. Chickweed injured it to some extent also, but not by any means to the same degree as the former. It is not so good a sample as No. 1, nor is it so luxuriant as No. 3—to which guano was applied.

cut off for soiling last harvest. The crop preceding the rape and vetches I find had been oats in '52, after turning the land with the spade (mixing surface and subsoil), to the depth of 15 inches in the Winter of '51.

"The soil is the result of the decomposition of clay slate, for the most part, and that of green stone (which decomposes rapidly on exposure to the air), and some boulders of millstone grit, and red sandstone. It may at present be called a clay loam, rendered light (to work) by a great amount of clay slate shale in a minute state of division, (loosened from the clay slate rock in the subsoil, and brought up at the time of digging), and which is decomposing very fast.

"After the removal of the rape and vetches above-mentioned, the land was ploughed with a strong furrow for the Winter. In April last, when I began to work it for the flax it was very weedy—gave it one ploughing, one grubbing, a double stroke of the harrow and close hand-picking, after ploughing and grubbing respectively. Next, a stroke of the grass harrow to level all tracks and expose any small weeds that escaped the two first pickings. Next rolled, the plots lined off, and seed sown as above-mentioned, the grass harrow following with one stroke in the line of the ridges, and finishing by a cross stroke. Immediately on the harrowing being finished the rain came down in torrents, putting rolling out of the question.

"It was not rolled, therefore I am sure it was better not, for though the land has rendered very fine, it would have crusted more or less after the very heavy rain had it been rolled.

"I may have omitted some required particulars in this short and not very well arranged report, but I shall be prepared to give any further account required, on getting notice to that effect.

"I should have stated when describing the soil, that it would appear to contain a large proportion of oxide of iron from its reddish colour. This substance is generally found in the ash of the flax plant in greater proportion than in that of any of our cultivated crops. I have now done with the flax for the present.

"William Boyle."

FLAX CULTURE, AS VIEWED IN REFERENCE TO AGRICULTURAL PROGRESS AND PROFIT.

A paper read on 10th August, 1854, at the Armagh Meeting of the Royal Agricultural Improvement Society of Ireland, by John Andrews, Esq., Comber.

At the request of the Council, as communicated to me by the Secretary, I propose to submit to this meeting a few observations on Flax culture as viewed in reference to agricultural progress and profit.

It would seem a wanton trespass on the time of the meeting to repeat the statistical statements and calculations, by which the great value to Ireland of its staple manufacture has been proved and illustrated; and it is almost equally unnecessary to remind the agriculturist that a great and increasing demand is pressing on the supply of the raw material of that manufacture, for which those engaged in it are yet largely dependent on the foreign grower, though the adaptation of our soil and climate to its production is on all hands admitted.

It, therefore, concerns the agriculturist to ascertain whether the supply of this material can be rendered a source of profit. It will readily be admitted that the introduction of an additional crop to the rotation of the farm is in itself an advantage. Every such addition to the number of our cultivated plants directly increases our power. It is well shown that the too frequent repetition of the same crop has a tendency to diminish the produce, and in many instances involves the risk of failure from disease. Physiologists do not seem yet to have decided whether such liabilities and tendencies are to be referred to the principle maintained by Decandolle and others, that there is a deposition by the roots of plants during their growth, of excremontitious matters, which are poisonous to those of the same family, but become fertilising manures to those of a different species; or whether the success of one species of crop on land which has been exhausted by the growth of another species arises from the diversified acquirements of different varieties of plants, each of which may find in the soil its peculiar sustenance, though that congenial to another may no longer exist in sufficient quantity. It seems not improbable that both these causes, and perhaps others which human penetration has not yet been enabled to discover, may exert their influences; but the fact is well known to the most cursory observer, and none but the most careless will disregard the admonition it conveys.

It has long been a cause of serious embarrassment to the farmer and cattle feeder that soil, on which clover has been repeated after short intervals, has refused to produce it, having become clover sick, as it has been termed not inexpressively. The turnip under the four course rotation has frequently fallen a victim to the disease called fingers and toes, which I apprehend has never appeared when the plant is not cultivated but at longer intervals. The carrot falls a prey to the canker worm, and there seems strong reason to believe that the power of the destructive fungus, which has in recent years destroyed the potato, is in a great measure to be attributed to the excessive cultivation of the plant, which, in itself, up to the moment of the attack of the destroyer, seems as healthy and vigorous as at any former period of its history. Parasitic plants are unquestionably fostered by frequent access to the plants to which they cling, and insects, which devour the the tender leaves, and in some cases even attack and destroy the vigorous growths of our stronger plants, are nurtured and multiplied by the too frequent exhibition of the same plants in the same soil. Each has its peculiar enemy. The fly which destroys the peach leaf will not alight upon the plum, nor will the pest of the plum tree attack the peach. The turnip fly will not touch the carrot or the beet, and both are safe from the attacks of the carrot canker worm. All the phenomena of nature indicate the necessity of change. The pine forest, we are told, when destroyed by fire, is succeeded by the oak, and the oak by the pine. The skilful agriculturist will profit by such indications, and increase the number of his cultivated crops by every addition which may be found adapted to his soil and climate, and which may be the source of reasonable profit.

Does the flax plant come within that category? I think the question may be answered in the affirmative. We have numerous instances of very large returns being realised from flax crops, raised under favourable circumstances; and not a few in which considerable profit has been derived from flax produced by land which had become unfit for the production of any of the cereals. But it must be admitted that success is somewhat more precarious than with most other crops, arising mainly from the short period of its growth, being rather less than four months in all. The stalk and its fibre being the chief source of profit, it is indispensable to the success of the crop that its growth should be uninterrupted from the beginning, or a stem of sufficient length cannot be expected. If checked by drought, or by any other cause in its early stage, it is forced to premature flowering, after which there is scarcely any extension of the stalk, and if it be very short its value is very inconsiderable. From this cause very dry climates, in which long periods of drought frequently occur, and arid, hungry soils, which are not sufficiently retentive of moisture, are altogether unsuited to the growth of the flax plant. The necessary conditions of both soil and climate for the successful cultivation of the plant are however, happily the general characteristics of our island, which is proverbially moist, while its geological formation is generally of a character, only too retentive of moisture, and requiring to be relieved by drainage. Having then the means of success within his reach, the prudent flax grower will take measures to render them effective, and turn them to the best account. It is barely necessary to observe that perfect drainage of the land is an indispensable preliminary. The effect of superabundant stagnant water in a soil, from which the access of air is necessarily excluded, in checking the growth of every plant is but too well known, and in the case of flax it is absolutely fatal. All the other conditions of good husbandry, which apply generally to cultivated crops, are in an eminent degree requisite in flax culture. Next to dryness, the entire absence of weeds must be secured. To all crops the growth of weeds is highly pernicious, but to flax it is ruinous, by not only retarding and interrupting its progress, but by deteriorating its fibre, which requires the free access of air to mature it. Besides, many classes of weeds grow up among the flax to a great length, and cannot be afterwards separated from it without much injury and loss in every subsequent operation. The total eradication of root weeds from soil in preparation for flax should be effected in Autumn, by the aid of grubbers before ploughing; Mr. Tennant's improved two horse grubber, being, perhaps, the best, and within reach of the means and power of even the small farmer. If this be completely done, a single ploughing will suffice, and good grubbing and harrowing in Spring will effect perfect pulverisation of the soil; and by destroying all the seed weeds which may have vegetated before the crop is sown, will render the task of weeding, during its growth, comparatively easy.

The indispensable conditions of removal of superfluous moisture and aeration of the soil by drainage, and the complete extirpation of weeds having been effected, a moderate degree of fertility in the soil must also be secured.

It is fortunately, not necessary, nor is it at all desirable, that the soil should be inordinately rich. On the contrary excessive luxuriance of growth is prejudicial, being generally, productive of coarseness of fibre, and, as the range of prices of prepared fibre is greater than any other product of the farm, extending from the minimum point of, perhaps, £40 per ton, to a maximum of not less than £200, it is obvious that a large produce of coarse low priced fibre must be much less remunerative than a moderate quantity of fine, which will command a much higher price. In fact, so nice and delicate are all the operations connected with the management of the flax plant, from the first step of casting the seed upon the ground, to the last stage in which it is drawn into the improved spindle of the mill-spinner, that the greater or less skill and accuracy of the operator, in every stage, affects the result as to profit in a degree, perhaps, unequalled in any other agricultural or manufacturing process or undertaking.

It is foreign to my present purpose to enter into a detail of all the minutiæ of these processes and manipulations, which have been so fully treated in the reports and instructions published by the Royal Flax Society and others; the object of the Society in inviting a discussion upon the subject being, on the present occasion as I understand it, to place the question of the expediency of flax culture, in reference to agricultural progress and profit, in its true position on general grounds.

But, in addition to the conditions which have been already referred to, that of assigning to the flax crop the most fitting place in a well arranged rotation, is of equal if not superior importance. For guidance in that important particular, repeated experiment and careful observation are requisite. Much has been written and said on the subject of rotations. Rules for the government of farmers have sometimes been prescribed with empirical dogmatism, and in an opposite extreme the greatest laxity of system has been advocated, and it has even been contended that under certain regulations, the successive cultivation of white crops may be indefinitely continued. Those who have carefully observed and profited by the result of their observations must, however, be satisfied, that the alternation of crops of different families, in many ways conduces to the success and profits of agriculture; and, as respects the plant under consideration it has repeatedly been found, as already stated, that flax will succeed upon land, on which it has not recently grown, though so poor and exhausted that no remunerative cereal crop could be raised upon it, an instance of which the writer observed a few days since on a field, which had borne wheat last year, and was in a rather reduced state. Oats were sown on one half, and flax on the other. The oats were very defective and did not promise to defray the cost of cultivation, while the flax promised a full average crop. The neglect of attention to the law of nature, which forbids the too frequent repetition of the same crop, had well nigh led to the abandonment of flax culture in the district with which the writer is best acquainted. During the long period of war, which terminated in 1815, the prices of flax had ruled so high, and farmers had derived so much profit from its cultivation, that it was sown extensively, and after short intervals, on the same fields, till it became so utterly unproductive, that for many years its cultivation had greatly diminished. The extension of flax spinning machinery having created an increased demand, and the subject having consequently attracted renewed attention, and efforts having been made by public bodies, as well as by individuals, to diffuse information as to the best modes of management, an impulse was again given, and the crop has during recent years been cultivated on better principles, and with more satisfactory results.

In the earlier periods of flax culture, when large breadths of ground were retained in pasture for the purpose of renovation, after a scourging course of successive white crops had reduced it to little better, for the time, than a *caput mortuum*, it was found, as it still is in some parts of the country, where that ruinous system, owing to the ignorance and obstinacy of its cultivators, still prevails that flax succeeded well after a first crop of oats, which had been sown on land that had remained four or five years in pasture. As agriculture has gradually improved in some districts, and a more fertilising and profitable system has been introduced, these old pasture lands have no longer been found in sufficient quantity; and flax having been the crop on which most farmers relied, as they still do in some districts, for raising money to pay rent and taxes, it was tried upon land which had borne potatoes, planted in lazy beds, and was found to succeed tolerably well, the surface of the ridges being very slightly stirred by the harrow preparatory to sowing, thus leaving the soil firm and solid, which has been found most favourable to the growth of the plant. Where potatoes have been cultivated in drills, flax has also been sometimes sown as a succeeding crop, and if the ground, after raising the potatoes, be ploughed, before Winter, into ridges across the drills, for the purpose of mixing the manured interior with the outer surface of the drills, and allowed to consolidate during the Winter, it also generally succeeds. The information received from Belgium, and diffused first by the officers of the Linen Board, and subsequently by the Royal Flax Society, having pointed to the greater advantage of interposing a cereal crop between the manured green crop and the flax, that system was tried, and has been successfully prosecuted in well cultivated districts, but on soils of inferior or only middling quality it has been found that, as in Belgium, liquid manure is liberally supplied in preparation for flax, so, in this country, where we are not possessed of liquid manure, and, as it is very doubtful whether, under ordinary circumstances, benefit would result from separating the liquid and solid portions of the manure, some substitute for the liquid application of Belgium should be found. The attention of the Chemico-Agricultural Society of Ulster was properly directed to the investigation of the subject, and, as the result of analysis of the flax plant, a formula of an artificial compound was recommended by Dr. Hodges, as adequate to the supply of all the substances which an ordinary crop of flax extracts from the soil. It was not the advice of Dr. Hodges that the quantity supplied should be limited to that minimum proportion; and, as it cannot be expected that the entire application would be taken up and assimilated by the first crop after application, it would seem advisable to apply a more liberal dressing. The chief substances required are phosphoric acid, ammonia, and potash; and, as the result of experiment, it may confidently be recommended to expend a sum of one pound per statute acre in a compound of these substances, to be well harrowed into the soil, and thoroughly incorporated with it at the time of sowing the seed. The writer has made experiments with manures of that character, both separately and in composition, to try their effects. Guano, bone manure, and pounded kelp were first tried separately in the same field, the central ridge having been left without any application. The effect of each was striking, but not uniform. At one end of the field the effect of the guano was very great, while that of the pounded kelp was inconsiderable; and at the opposite end the kelp had effected a very great improvement, while that of the guano was less than at the other end. The effect of the bone manure was also irregular. The result of that experiment induced me afterwards to apply superphosphate of lime in the proportion containing one hundred weight of bones, with two hundred weight of pounded kelp, of which I happened to have a supply, per statute acre, and I would strongly recommend the flax grower sowing flax after a white crop to apply some such compound.

A manure containing ¾ cwt. powdered bones, which would be more efficient if vitriolized; 1 cwt. of guano, or, in its stead, ¾ cwt. of sulphate of ammonia, and ½ cwt. of chloride of potassium, which is a refuse of the iodine manufacture, would supply all the substances which seem to be necessary for a statute acre, and would cost about twenty-five shillings.

Having arrived at the conclusion that it is advantageous, on the whole, to interpose a white crop between the manured green crop and flax, it is important to ascertain the green crop which, according to our present state of knowledge, forms the best preparative. During the palmy days of the potato, when the Irish farmer could not be persuaded to apply any portion of his scanty supply of manure to any other crop, no opportunity was afforded to him of trying the effect of any other; but since the failure of the potato has forced the reluctant farmer to introduce other green crops into his rotation, he has it now in his power to make a selection. It fortunately happens that the greater part of our soils, unless in very elevated situations, are well suited to the growth of the pulse tribe, and of that tribe beans, if moderately manured, drilled, and well cleaned, forms one of the best preparatives for a white crop, and has also been proved to be the best known preparative for flax, either immediately, or as preceding a cereal crop. This the writer has ascertained both by his own experience and by that of such persons as have tried it, either accidently or from design. It has also been found that the pulse tribe and the flax plant reciprocally act and re-act beneficially on each other, the writer having for many years raised large crops of winter vetches on land from which flax had been taken, and being aware at this moment of a flax crop, succeeding vetches, being superior to that growing on potato land on the same farm, thus proving that all the varieties of the pulse tribe are excellent preparatives for flax. The knowledge of this fact very much strengthens the hands of the farmer. Beans especially, from feeding on the subsoil into which, if ærated and dried by proper drainage, its roots will penetrate to the full depth of the drains, and also from feeding largely upon the air by means of its expanded foilage, is by no means an exhausting crop, and, if its abundant produce in straw and grain is consumed, as it ought, in feeding cattle and swine upon the farm, the quantity and quality of the manure will be largely increased, and the succeeding crops of the cereals and of flax will be both directly and indirectly augmented.

As one great object of such assemblies, as I have now the honor to address, is the interchange of ideas, and the intercommunication of knowledge, it will not, I apprehend, be considered irrelevant to the subject of the present paper if I shall briefly refer to the arrangements on a small farm which I have attempted to cultivate as a model for small landholders—flax being introduced as one item of its rotation. The leading object being to keep the largest possible stock of black cattle and swine, flax, before its independent value had been ascertained, was introduced very much because, from the early period, at which it is taken from the ground, it affords the facility for sowing rape for spring feeding. The flax being pulled in the end of July, or very early in August, the one-half of the ground which had been occupied by it is moderately manured and sown broad cast with rape in two or three divisions from the earliest period possible in August to the 1st September. Such rape comes into use soon after the middle of April, and affords an abundant supply of food for cows till about the 21st May, when the first cutting of clover is ready for use. The ground which has been so occupied by rape is sown with spring vetches late in the month of May, from which, in the end of September, and during October, when the second crop of clover is exhausted, a supply of fine succulent herbage is most opportunely afforded. The other half of the flax ground is, about the 1st October, sown with winter vetches, mixed with a little rye. These vetches, by the 20th June, when the first crop of clover has been consumed, have attained considerable strength and firmness, and supply the cows with excellent food till nearly the first August, when the second crop of clover is ready. It continues in use till far on in September, when, as before stated, the Spring sown vetches succeed. The ground yielding the winter vetches is prepared and manured for transplanted Swedes, fine strong plants of which, in the end of July and beginning of August, are taken from the drills in which twice the number of plants which is required for the crop have been permitted to remain, in order that alternate plants may thus be removed; and such plants having formed bulbs of the size of small eggs, and with largely developed leaves, are never found to fail, even though transplanted in a dry season if the manure is placed in the drills in a moist state. The Swedes so transplanted continue to grow during the winter till checked by severe frost, and afford a valuable addition to the root crops for winter use. It will thus be seen that from the portion occupied by flax, owing to its early separation from the ground, facility is afforded for raising two green crops of distinct varieties in the succeeding year, and by no other means could such an advantage be so satisfactorily secured. Here, then, is a great benefit indirectly resulting from flax culture.

The rotation of the small farm, consisting of ten Cunningham acres, of which I have been speaking, is so arranged that exactly one-half is devoted to the raising of cattle food, and one-half to cereal crops, flax, and potatoes—the latter, since that crop became so precarious, occupying only a twenty-second part of the whole. The farm is dispersed in eleven divisions, one of which is in permanent pasture, being enclosed separately by a fence, all internal fences having been removed from the remainder of the farm. The green crops for cattle food include clover and Italian rye-grass, vetches, beans, turnips, mangolds, and cabbages. The succession of feeding, of which a fresh supply is provided for every month of the year, commences in Spring, soon after the middle of April, with rape; from about the 20th May, till the 20th June, clover and Italian rye-grass; thence till about the 1st August, winter vetches; from the 1st August, till late in September, second growth of clover; in October and beginning of November, some cabbages, mangel wurzel leaves, mixed with dry old straw, to correct their succulence, and a portion of clover and rye-grass of third growth. During the Summer each cow is also allowed two pounds of bean-meal daily on her drink. I have never been obliged to resort to my root crops till about the 12th November, from which date, till the return of the season for rape in Spring, turnips with chaff and cut straw, and such portions of hay from the first growth of clover and Italian rye-grass as could be spared, enriched with bean meal, boiled into gruel with distiller's wash, form the winter food. The greater part of the mangel wurzel is reserved for pigs, which are found to thrive much better on it than on turnips. The pigs receive besides a little buttermilk and the refuse of the house, and some bean-meal; and the mangel wurzel is available for them till August in the succeeding year, when early cabbages come into use, and after them a succession of drum-head cabbages provides for the pigs till the middle of November, when the mangolds are again ready.

In the rotation, the white and green crops alternate, and the large number of cattle fed constantly in the house, except during two or three hours daily in Summer, when they are admitted to the small pasture field, afford manure sufficient to give light dressings to the green crops in each alternate year. The stock of cattle, including an ox for draught, is never less, and is sometimes more than four in Summer, and six in Winter, and the number of pigs is three on the average. The milch cows, highly fed as described, being kept for the supply of the family, are credited to the farm at ten pounds each per annum, being certainly less than they would yield if their produce were sold, and the result of accounts of the farm, of ten Cunningham acres, which are accurately kept, exhibited in the year ending 30th September, 1852, a gross product of £114 11s 10d, and a nett profit of £43 5s 6d, the rent charges being at £2 per Cunningham acre, and the sum paid for wages £33 11s 6d, and in the year ending 30th September, 1853, a gross produce of £128 6s 4d, and a nett profit of £56 2s 3d, the rent at £2 per acre, and the amount of wages, £34 6s 3d. The balance sheet of each year is appended to this statement:—

To this very satisfactory result flax culture has directly, as well as indirectly contributed. The sum received for the produce of 3A. 23P. Cunningham measure of flax, in the first year was for flax, 5 cwt. 3 qrs. 2 lbs., at 52s 6d per lb..................................	£15	2	8
For seed 10 1-16 bushels................................	5	1	0
	£20	4	2

From which, deducting £7, the estimated cost of an acre, including rent, taxes, seed, manure, and labour in all stages, the balance, £13 4s 2d, forms a handsome item in the profit account.

In the second year the produce was:—

Flax, 5 cwt. 3 qrs. 12lbs., at 65s 4d per cwt..........	£19	2	8
Seed, 10¾ bushels, at 12s per bushel....................	6	9	0
	£25	11	8
Deducting......	7	0	0
Nett profit....................................	£18	11	8

The crop in both years was treated on the Courtrai system, winning and stacking it till the following Spring, when the seed was taken off and sold for sowing, and the straw watered during the Summer. I am not prepared to offer a decided opinion whether that mode of treatment will, on the whole, be found most profitable. If home-saved seed should continue in demand for sowing, I am satisfied it would be so, as the gain by the seed is so important an item. If a prejudice against home saved seed which has been encouraged in the present year, contrary to the experience of the writer, shall prevail, it is probable that more profit would result from rippling off the seed, and watering the straw immediately, as there can be no doubt that a finer fibre is thereby secured than can be obtained by any process yet known to us in connexion with winning and stacking. By one process or the other the seed should unquestionably be preserved. A much less sum than has been realised by the writer would materially increase the profit from the crop. Ten bushels of seed per statute acre is a moderate produce, and at 5s or 6s per bushel, which it is certainly worth as cattle food, the preservation of it would be sufficiently remunerative. It may be observed that to a large grower the winnowing and stacking of the crop is by much the more convenient plan, as the attention and labour required by the treatment in the water and on the grass are thus transferred from the hurried season of harvest to the following Summer, when a time can be chosen which shall not interfere with the other business of the farm.

I venture to think that I have proved that by its direct and indirect operation, flax culture can be made conducive to agricultural progress and profit, and I would further suggest that the results I have stated should tend to relive the apprehension that, under the prevalent system of small farms, agriculture must necessarily languish and decline. The gross produce which I have derived from a farm of ten Cunningham acres, under a system of management accessable to all who may possess the knowledge and the will to apply it, would sustain the peasantry of Ireland, in posseession of farms of even that small extent, in comfort and independence. The profit derived after payment of a very full rent, and of wages amounting to about £3 10s per Cunningham acre, is not inconsiderable; and, if the occupier were, by himself and family, the cultivators, the retention of nearly £35 in the year, which has been expended in wages, would prove a large addition to his means of living. It has long been my object to establish that position, and on my mind no doubt remains that if ignorance and her twin-sister, obstinacy, could be removed from the Irish agricultural mind, there would be no necessity, either with a view to public or individual good, to expel the small tenant from his holding; but the great social advantage would result from the existence of small as well as large farms, as was many years since most satisfactorily proved and illustrated by Mr. Sharman Crawford, in a series of letters, on the relative advantages of large and small holdings.

Under the present mixed system of large and small holdings an opportunity is afforded to the industrious and intelligent labourer, to rise in the social scale by first entering upon a small farm, and advancing by successive steps to the possession of a larger, a process which would be altogether impossible if farms were all of large extent. Of such progress I have myself witnessed several gratifying instances.

The important object of ameliorating the condition of the Irish farmer by the diffusion of information, and by stimulating exertion, has called this valuable Society into existence. The efforts of the Board of National Education, who are introducing agricultural instruction into their schools, and establishing model farms, and training establishments, must, also, contribute largely to the same end. The employment, by landed proprietors, of skilful agriculturists for the instruction of the tenantry, and the direction of their operations, also tends to the same object. No effort should be spared to promote the dispersion of ignorance and the advancement of knowledge, by all who are interested in the success of agriculture, and who are actuated by a patriotic desire for the happiness and well being and prosperity of their country.

Dr. TEN ACRE FARM—SEASON 1851-52. Cr.

1851.					1851.				
Sept. 30.	To Stock, valued at,……	£52	2	6	Dec. 26.	By 1 Cow, fat, sold,……	£13	12	10
	Stock bought from 30th September, 1851, to 30th September, 1852,……	24	2	6	1852. Jan. 14.	Proceeds, 2 Pigs.……	8	2	1
	Wages paid,……	33	11	6	April 2.	Oats, 18 cwt.…… £6 6 8			
	County Cess,……	1	9	10		Oatmeal,…… 2 6 8			
	Manure and Seeds,……	7	0	10			8	13	4
	Cattle Food bought,……	9	9	5	May 5.	Wheat, 45 cwt. 0 qr. 23 lbs.……	19	13	5
	Rent, £2 per acre,……	20	0	0	— 12.	Proceeds, 3 Pigs,……	9	14	5
	Sundry small Expenses and Horse Work,.	5	0	0	June 17.	1 Cow, fat,……	11	19	0
	Repairs of Tools,……	2	0	0	— 28.	1 Cow, do.……	15	18	0
	Scutching Flax,……	2	4	2	July 24.	1 Calf,……	0	4	0
	Buttermilk and Scraps,……	3	0	0	Aug. 25.	1 Pig,……	1	10	0
	Profit and Loss, for Gain……	43	5	6	Sept. 30.	Flax, 5 cwt. 3 qr. 2 lb. at 52s 6d. £15 2 8			
						Flaxseed, 10 1-14 Bushels at 10s. 5 1 6			
							20	4	2
						Potatoes for House,……	7	0	0
						Keep of 2 Milch Cows for 1 year, and 1 Cow for a half-year,……	25	0	0
						Feeding for Fowl, and Fowl reared,……	5	0	0
						Stock valued at,……	56	15	0
		£203	6	3			£203	6	3
						Gross Produce, deducting Food purchased,……	£114	11	10

TEN ACRE FARM—SEASON 1852.

Dr.

Date		£	s.	d.
1852.				
Sept. 30.	To Stock, valued at	£56	15	0
	Stock bought from 30th September, 1851, to 30th September, 1852,	12	9	0
	Wages paid,	34	6	3
	County Cess,	1	6	0
	Manure and Seeds,	6	7	8
	Cattle Food bought,	15	19	9
	Rent, £2 per acre,	20	0	0
	Sundry small Expenses and Horse Work,	5	0	0
	Repairs of Tools,	3	0	0
	Scutching Flax,	2	4	2
	Buttermilk and Scraps,	3	0	0
	Profit and Loss, for Gain	56	2	3
		£216	10	1

Cr.

Date			£	s.	d.
1852.					
Nov. 17.	By a Calf Skin sold,		£0	3	4
1853.					
Feb. 18.	Proceeds, 2 Pigs,		11	6	1
Mar. 15.	1 Cow, fat,		10	2	6
Apr. 8.	Oats, 23 cwt. 1 qr. 23 lb.		7	5	1
	Lard,		0	5	9
May 9.	Wheat, 56 cwt. 0 qr. 9 lb.		30	16	7
— 16.	Proceeds, 3 Pigs,		12	11	7
June 4.	1 Heifer, fat, sold,		14	0	6
July 4.	1 do. do.		11	19	0
— 8.	1 Cow, sold, fat,		9	14	
Sept.	Flax, 5 cwt. 3 qr. 12 lb. at 65s 4d	£19 2 8			
	Flaxseed, 10¾ Bush. at 12s 0d	6 9 0			
			25	11	8
	Potatoes for House,		8	0	0
	Keep of 2 Milch Cows for 1 year, and 1 Cow for a half-year,		25	0	0
	Feeding for Fowl, and Fowl reared		5	0	0
Sept. 30.	Stock, valued at		44	5	0
			£216	10	1
	Gross Produce, deducting Food purchased		£128	6	4

NOTE.—The iten of seeds includes only such as were purchased. Seed taken from the produce of the Farm by so much diminished the amount of produce sold.

IRISH SCUTCH-MILLS.

In the Appendix to last year's Report, a voluminous Government return was given, collected at the suggestion of the Society, showing the number, position, and number of stocks, in mills for scutching flax, in each County, Barony, and Parish of Ireland, in the year 1852. The return was given thus fully, as it was the first ever made. This year it is not necessary to go into such minute particulars, it being sufficient to show the number of mills and of stocks in each County in 1853, as compared with 1852. The following table will furnish this information:—

NUMBER OF SCUTH-MILLS & OF STOCKS IN IRELAND, IN 1852 & 1853.

	No. of Mills.				No. of Stocks.			
	1852.	1853.	Incr.	Decr.	1852.	1853.	Incr.	Decr.
Ulster.								
Antrim	90	103	13	...	432	631	199	...
Armagh	98	111	13	...	724	808	84	...
Cavan	8	10	2	...	46	56	10	...
Donegall	227	251	24	...	945	1,035	90	...
Down	174	186	12	...	959	1,234	275	...
Fermanagh	9	10	1	...	48	50	2	...
Londonderry	155	168	13	...	698	761	68	...
Monaghan	45	50	5	...	270	307	37	...
Tyrone	110	127	17	...	528	633	105	...
Total Ulster	916	1,016	100	...	4,650	5,515	965	...
Leinster.								
Louth	7	6	...	1	66	67	1	...
Longford	1	1	...	...	8	8	...	...
Meath	4	5	1	...	26	34	8	...
Queen's	1	1	...	...	6	6	...	...
Westmeath	2	0	...	2	6	...	...	6
Wexford	4	5	1	...	22	29	7	...
Total Leinster	19	18	...	1	134	144	10	...
Munster.								
Cork	8	10	2	...	82	114	32	..
Limerick	2	2	...	...	34	18	...	16
Tipperary	4	3	...	1	24	17	...	7
Waterford	1	2	1	...	12	16	4	...
Total Munster	15	17	2	...	152	165	13	...
Connaught.								
Galway	1	1	...	...	6	6	...	...
Mayo	1	1	...	...	8	12	4	...
Sligo	4	3	...	1	31	29	...	2
Total Connaught	6	5	...	1	45	47	2	...
Grand Total Ireland	956	1,056	100	...	4,981	5,871	890	...

In the returns for 1853, an interesting table is appended, showing the number of weeks during which each scutch-mill was at work in that year. From this we have compiled the following table, giving the number of stocks, instead of the number of mills :—

TIME TABLE OF IRISH SCUTCH-MILLS, FOR 1853.

		Under 10 Weeks.	11 to 15 Weeks.	16 to 20 Weeks.	21 to 25 Weeks.	26 to 30 Weeks.	31 to 35 Weeks.	36 to 40 Weeks.	41 to 45 Weeks.	46 Wks and Up.wds
		Stocks.	Stocks.	Stocks.	Stocks.	Stocks.	Stocks.	Stocks.	Stocks.	Stocks.
ULSTER.	Antrim...	70	140	157	63	96	57	8	6	4
	Armagh	18	130	186	134	192	36	18	12	38
	Cavan.....	2	6	...	6	4	18	6	8	6
	Donegall	61	138	208	153	246	20	104	11	16
	Down.....	36	236	239	156	212	77	105	57	16
	F.managh	11	9	12	...	6	12	...	...	...
	L.derry...	17	111	199	97	145	108	57	...	4
	Monagh.	6	16	94	56	28	33	56	4	10
	Tyrone...	11	24	98	61	211	62	88	14	11
LIENSTER.	Longford	...	...	...	...	8	...	...	...	...
	Louth. ...	8	...	8	3	4	...	...	...	44
	Queens...	...	...	...	...	6	...	...	...	...
	Meath....	...	4	36	...	...	6	...	...	...
	Wexford	4	...	12	...	11	...	...	2	...
MUNSTER.	Cork......	12	...	3	...	3	...	8	14	41
	Limerick	4	...	...	...	...	...	...	14	...
	Tp.rary.	...	...	3	...	...	...	...	...	8
	Wat.ford	4	...	...	...	...	...	...	12	...
CONNAUGHT.	Galway...	...	...	...	...	6	...	...	...	...
	Mayo.....	12	...	...	...	...	...	...	...	...
	Sligo ...	16	13	...	...	...	...	...	...	...
	Total......	292	827	1,205	729	978	429	450	154	198

The proportion of the whole number of scutching-stocks to each of these sections, is as follows :—

5½	per cent.	worked	less than Ten	Weeks.
15¾	,,	,,	11 to 15	,,
22¼	,,	,,	16 to 20	,,
14	,,	,,	21 to 25	,,
18½	,,	,,	26 to 30	,,
8¼	,,	,,	31 to 35	,,
8½	,,	,,	36 to 40	,,
3	,,	,,	41 to 45	,,
3¾	,,	,,	Upwards of 45	,,

THE COMPOSITION OF THE FLAX FIBRE

AS PREPARED FOR SPINNING,

FROM THE REPORT DRAWN UP AT THE REQUEST OF THE BRITISH ASSOCIATION OF SCIENCE,

By PROFESSOR HODGES, M.D., F.C.S.

◆

COMPOSITION OF DRESSED FLAX.

It was, formerly, usually assumed that, by the processes employed in the preparation of flax for spinning purposes, the fibre was deprived of all the constituents which the plant, during its growth, had extracted from the soil, and that it might be regarded as possessing the same composition as the cellulose of the chemist. This opinion I, several years ago, proved to be erroneous; and the results of the following analysis of samples of flax fibre, which was placed at my disposal by Mr. W. Charters, of Belfast, of the Falls Mill Company, show that not merely does the dressed flax of commerce contain a portion of the inorganic matters of the plant, but *that there remains locked up in the cells of the fibre a considerable amount of the nitrogenized and other proximate compounds of the unsteeped straw.* The following were the methods adopted in the examination of the flax fibre:—

The fibre cut into small pieces was repeatedly treated with cold water so long as anything dissolved. The solution obtained was strained through linen, and afterwards filtered. On boiling the filtered liquid, only a slight troubling was observed; but, on the addition of a few drops of acetic acid, a precipitate of caseine was obtained, which, after twelve hours' subsidence, was collected, washed, dried, and weighed. In the liquid, from which the caseine was separated, when evaporated almost to a syrupy consistence, alcohol produced a bulky greyish precipitate, which was collected, washed, and dried. The alcoholic liquid, on concentration, afforded a rich orange solution, and gave, on evaporation, a reddish brown residue, which, when heated, evolved a strong odour like caramel, and its solution had a sweetish taste, and afforded the usual reactions of grape sugar. The several precipitates, after being weighed, were carefully incinerated, and the weight of ash obtained in each case deducted. The amount of nitrogen in the samples included, first, the estimation of the total amount of nitrogen in the dried flax; and secondly, of the amount which was retained in the form of insoluble azotized compounds in a portion of the fibre exhausted by the treatment of water. The amount of wax and oil present was obtained by treating a portion of the fibre dried at 212 degrees in a peculiar apparatus, which enables me to expose the substance to be acted on to the vapour of ether, which, when condensed in a separate cooling apparatus, is occasionally forced through it by atmospheric pressure. The residue of the flax, after exhaustation with water, and the substraction of the amount of insoluble salts which it was found to contain, and of the wax and insoluble nitrogenized bodies, as calculated from the amount of nitrogen in the washed fibre, was regarded as cellular fibre. The following is a statement of the results obtained in the examination of two samples of dressed flax of average quality. The samples dried at 212 degrees, contain, respectively, No. 1, 9·10, and No. 2, 8·61 per cent. of water:—

	No. 1.	No. 2.
Wax, volatile oil and acid, resinous matters,	2·200	2·620
Sugar and colouring matters soluble in alcohol, ...	1·541	0·624
Inorganic matters soluble in alcohol, ...	0·281	0·116
Gum and Pectin, ...	0·698	0·280
Salts, insoluble in alcohol, ...	0·076	0·044
Nitrogenized compounds, soluble in water,...	3·560	1·386
Nitrogenized compounds, insoluble in water,	2·940	4·310
Inorganic matters united with the fibre. ...	0·938	1·490
Cellular fibre, ...	87·974	89·136
	100·000	100.000

The total amount of inorganic matters present in the samples by careful incineration of the dressed flax, in platinum dishes, No. 1, dried at 212° left 1·40 per cent., and No. 2. 1·54 per cent. The ash of No. 1 was white, while that of No. 2, had a brick red color, each had, respectively, the following composition :—

	Ash of Sample No. 1.	Ash of Sample No. 2.
Potash, ...	7·94	1·85
Soda, ...	2·19	7·63
Chloride of Sodium,........................	2·75	1·77
Lime, ...	29·24	27·08
Magnesia,....................................	4·64	0·70
Peroxide of Iron, ...	3·72	7·40
Phosphoric acid, ...	5·23	10·40
Sulphuric acid,..............................	6·00	3·12
Carbonic acid, ...	28·17	19·10
Silica, ...	10·45	21·31
	100·33	100·36

In addition to the above analysis of fibre, prepared by the hot water system, a sample of Courtrai flax was examined, the amount of pure fibre obtained by repeated digestion of the dried flax in a diluted solution of potash, (one-half ounce of caustic potash to three pints of water), and after the careful removal of all traces of potash by washing in distilled water, the exhausted fibre was incinerated, and the amount of ash left deducted. The following were the results:—

COURTRAI FLAX STEEPED AND DRESSED.

100 parts contained of water, 8·40 ; and dried at 212° gave of wax and oil 2·30 per cent., and on combustion with soda lime, 1·04 per cent. of nitrogen. Treated as described with dilute solution of caustic potash, there remained, after the substraction of the ash obtained by the incineration of the residue, 82·56 per cent. of pure fibre. A sample of the flax dried at 212° left, when burned, 1·05 per cent. of ash ; if therefore we may assume the amount of nitrogen present as representing the proportion of the so-called proteine compounds contained in the flax, the following statement of the composition of the sample may be given:—

FLAX DRIED AT 212°.

Wax and oil, ...	2·30
Nitrogenized compounds, caseine, &c., ...	6·50
Gum, sugar, and colouring matters, ...	7·59
Inorganic matters, ...	1·05
Pure fibre, ...	82·56
	100·00

The foregoing analyses, therefore, show contrary to what has been frequently asserted, that the fibre of flax in the condition in which it is purchased by the spinner, after it has been steeped and dressed, contains a considerable amount, not merely of the earthy and saline ingredients which the plant has taken from the soil, but of the various compounds, such as wax and caseine, which belong to the unsteeped straw, and upon the presence of [which in the fibre it is probable much of its spinning qualities depend. An examination of the plant, as pulled from the field in the usual state of maturity, when the seeds contained in the capsules begin to assume a brown colour, shows that it contains starch which can be readily extracted by placing the stems, cut into pieces, in a powerful lever press, and moistening them with a small quantity of water. By allowing the expressed liquid to remain at rest, the starch subsides, and assumes a purple tinge on the addition of a watery solution of iodine. When, however, the flax straw is examined after it has remained exposed to the air for several days in the stook, the liquid obtained by subjecting it to pressure, and washing with water, was found to afford no indication of the presence of starch. In the dressed flax no trace of starch could be detected, and the discovery of the existence of a considerable amount of grape sugar is exceedingly interesting, as corroborative of the statement of experienced dressers, that by storing up the steeped flax as imperfectly dried, by exposure to the air for some weeks before proceeding to remove the adherent woody matters, by scutching, the separation of fibre is greatly facilitated, and its qualities improved.

ANNUAL BALANCE SHEET

OF THE

ROYAL SOCIETY FOR THE PROMOTION AND IMPROVEMENT OF THE GROWTH OF FLAX IN IRELAND.

Dr.

1853.							
Oct. 31.—	To balance on hands, ...				£316	14	5
1854.							
April 13.—	" Government grant for 1854, ...				1,000	0	0
Oct. 31.—	" Subscriptions paid in to this date, ...				317	8	0
					£1,634	2	5

Cr.

1854.							
Oct. 31.—	By Office :—Rent, Taxes, Fuel, Attendance, &c., ...				£48	5	3
—	" Printing and Advertising, ...				42	15	3
—	" Postage and Carriage of Parcels, ...				33	13	4
—	" Stationery, ...				8	14	7
—	" Premiums Awarded, ...				20	0	0
—	" Sundries, not included in the foregoing items, ...				33	19	9
—	" Secretary's Salary and allowance for Clerk, ...				220	0	0
—	" Instructors' Salaries, in full or in part, viz. :—						
	William Smith, ...	£82	15	0			
	Hugh M'Dowell, ...	43	0	0			
	John De Cock, ...	39	8	0			
	Hugh Orr, ...	35	0	0			
	D. J. Boyle, ...	33	5	0			
	Samuel Clarke, ...	28	17	6			
	Samuel M'Cullough, ...	27	10	0			
	William Anderson, ...	26	0	0			
	John Grennan, ...	25	15	0			
	Andrew Melville, ...	19	10	0			
	William O'Flannigan, ...	18	0	0			
	James M'Aree, ...	15	15	0			
	W. J. O'Hara, ...	15	0	0			
	James Smyth, ...	15	0	0			
	Henry Haslett, ...	14	18	0			
	Hugh Nelson, ...	11	15	0			
	E. F. Deman, ...	6	10	0			
	John M'Closkey, ...	6	0	0			
	Isaac Irwin, ...	4	10	0			
	Samuel Kennedy, ...	3	0	0			
	James Orr, ...	2	0	0			
	James Boyd, ...	1	13	6			
					475	2	0
	Carry forward, ...				£882	10	2

1854.

	Brought forward, ...		£882 10 2
Oct. 31.—	By Travelling Expenses, viz:—		
	Instructors, ...	£541 10 9	
	Secretary and Committee, ...	11 5 11	
			552 16 8
	By Balance in Belfast Bank, ...	£91 6 1	
	" Do. in Hands, ...	107 9 6	
			198 15 7
			£1,634 2 5

JOHN CHARTERS, } AUDITORS.
JAMES CAMPBELL, }

JAMES MACADAM, JUN., SECRETARY.

SUPPLEMENT,

SHEWING THE RECEIPTS AND DISBURSEMENTS OF THE SOCIETY, FROM ITS FORMATION, 1st MARCH, 1841, TO 31st OCTOBER, 1854.

Dr.

RECEIPTS.

	£	s.	d.
Subscriptions and Donations, ...	£9,077	13	3
Government Grants, ...	7,000	0	0
Repayments for Machinery, ...	249	6	2
Accidental Receipts, ...	33	0	11
	£16,360	0	4

Cr.

DISBURSEMENTS.

	£	s.	d.
Instructors' Salaries and Travelling Expenses,...	£11,018	5	0
Secretary's Salary, ...	2,135	0	0
Prizes awarded, ...	502	11	0
Machinery and Implements, ...	458	10	0
Printing and Advertising, ...	719	18	10
Office Rent, Taxes, Fuel, &c., ...	452	12	9
Postage and Carriage, ...	223	10	9
Stationery, ...	97	12	7
Sundries, not included in the foregoing items, ...	553	8	10
	£16,161	4	9
Balance on hands, 31st Oct., 1854, ...	198	15	7
	£16,360	0	4

CONTRIBUTIONS TO SOCIETY'S FUNDS.

	1841 to 1853.			1854.		
HIS ROYAL HIGHNESS PRINCE ALBERT,	£25	0	0			
Abercorn, the Marquis of,	60	0	0	£5	0	0
Aberdeen, Gordon & Co., Montrose,	10	0	0			
Adair, A. Shafto, M.P., Ballymena,	50	0	0	5	0	0
Adair and Gunning, Cookstown,	30	17	0			
Agnew, James, Cairncastle Lodge, Larne,	25	0	0			
Ainsworth H., Cleator, Whitehaven,	10	0	0			
Aitken, A. & M. J., Spalding, Lincolnshire,	1	1	0	1	1	0
Alexander, Henry,	1	1	0			
Alexander, John, Millford, Carlow,	2	2	0			
Alexander, John, Newtonlimavady,	5	0	0			
Alexander, N., M.P., Portglenone,	31	6	0			
Algeo, Captain, Armagh,	5	5	0			
Allen, Dr. J.,	10	0	0			
Allen, John Read, Mount Panther, County Down,	5	0	0			
Allen, W.,	4	0	0			
Anderson, Henry, Ballinacree, County Antrim,	4	4	0			
Andrews, J. & Sons, Comber,	21	10	0			
Andrews, Michael, Ardoyne,	8	8	0	1	1	0
Annesley, Viscount, Castlewellan,	4	4	0			
Arbuckle, Lieutenant-Colonel, Donaghadee,	2	2	0			
Armstrong, William, Lurgan,	4	4	0			
Armstrong, W. Jones, Kippure Park, Blessington,	5	5	0			
Atkinson, Henry, Moy,	1	1	0			
Atkinson, W. S., Portadown,	1	1	0			
Aytoun, James, Kirkaldy,	2	0	0			
Bacon, Edward, Thorock-hall, Lincoln,	12	12	0			
Baker, Thomas & Son, London,	2	0	0			
Balfour, Alexander, Kirkcaldy,	1	0	0			
Ballymahon Flax Committee, County Longford,	10	0	0			
Bandon Branch, County Cork,	30	0	0	10	0	0
Bangor, Viscount,	8	0	0	2	0	0
Bankhead, J. B., Liverpool,	11	11	0			
Bantry Branch, County Cork,	10	0	0			
Barbour, William, Lisburn,	2	2	0			
Barcroft, J. & N., Stramore,	2	2	0			
Barklie, A. & G., Mullamore,	10	0	0			
Barklie, William, Armagh,	1	1	0			
Barnett, Thomas & Co.,	1	1	0			
Barter, Dr., Blarney, County Cork,	2	2	0			
Barton, F. W., Clonally, Kish,	2	2	0			
Bates, John, Belfast,	11	11	0	1	1	0
Bateson, Sir R., Bart., Belvoir Park,	14	3	0	2	2	0
Bateson, Thomas, M.P., Derry,	3	3	0	1	1	0
Bath, Marquis of,	5	0	0			
Batt, Thomas, Purdysburn,	5	0	0			
Beattie, John, Portadown,	1	0	0			
Bells & Calvert, Whitehouse,	60	3	0	2	2	0
Bell, John, & Co., Whitehaven,	1	0	0			
Bell, J. & W. L., & Co., Ballyclare,	1	1	0			

	1841 to 1853.			1854.		
Bell, Thomas, & Co., Lurgan,	£8	8	0			
Bennett & Adams, Ballydevitt, County Derry,	5	5	0	£1	1	0
Bennett, Thomas, Coleraine,	3	3	0			
Bennett, William, Ross, Herefordshire,	5	0	0			
Benyon & Co., Leeds,	10	0	0			
Beresford, J. B., Learmount, County Derry,	5	0	0			
Bernard & Koch, Cregagh, County Down,	7	7	0			
Berry, Joseph, Moira,	1	1	0			
Besnard, Julius, Cork,	1	1	0			
Bessborough, Earl of,	10	0	0			
Bianconi, C., Longford, Cashel,	10	0	0			
Bicknell, George, Kilrea,	7	7	0	1	1	0
Bigger, Lennox, Dundalk,	1	1	0			
Birch, J., Ballybeen, County Down,	10	0	0			
Birley, J., & Sons, Kirkham, Lancashire,	155	0	0			
Birney, J., Lisburn,	6	6	0	1	1	0
Bishop Sterne's Charities,	9	0	0	3	0	0
Black, Henderson, Dromara,	2	2	0			
Black, H., Belfast,	1	1	0			
Blacker, W., Armagh,	1	1	0			
Blackwood, James, Strangford,	4	4	0			
Blackwood, William,	2	0	0			
Blakely, Rev. F., Moneyrea,	7	7	0			
Blakely, T., M.D.,	1	0	0			
Bland, Rev. R., Whitehouse,	1	1	0			
Bleekrode, Dr., Delft, Holland,				1	1	0
Blundell, Francis, Navan,	18	14	0			
Boomer, J. & Co., Belfast,	28	11	0	5	0	0
Booth, Sir R. Gore, Bart., M.P., Sligo,	1	1	0			
Borthwick, John, Kilroot,	10	10	0	1	1	0
Boyd, James B. Ballier, Armagh,	2	2	0	2	2	0
Bouch, Joseph, London,	1	1	0			
Boyd, John & Co., Belfast,	73	3	8			
Boyd, J. E., Letterkenny,	2	2	0			
Boyd, Robert, Belfast,	1	0	0			
Boyle, Gill, & Co., Leeds,	4	2	0			
Brady, Captain R., Oaklands, Cookstown	5	0	0			
Briggs, Thomas, Manchester,	2	2	0	1	1	0
Brogden, A., Manchester,	1	0	0			
Brooke, B. G., Moyaver, County Antrim,	3	3	0			
Brooke, Sir A. B., Bart., M.P., Brookborough,	20	0	0	5	0	0
Brooks, John, Bolton,	10	0	0			
Brown, H. & Nephews, Chester,	1	1	0			
Brown, J. & Sons, Donacloney,	6	6	0			
Brown, J. & W., Dundee,	5	0	0			
Brown, R. Clayton, Carlow,	1	0	0			
Brown, Robert, Belfast,	5	0	0			
Brush, C. M., Dromore,	1	1	0			
Bryan, Lieut.-Col. Jenkinson, Kilkenny,	1	0	0			
Buckley, Henry, Hillsborough, Roscrea,	1	1	0			
Bucknall & Son, Liverpool,	2	2	0			
Bucknall, H. W., Somertshire,	1	1	0			
Buist, A. J., Dundee,	10	6	0			
Burgess, J. Y., Parkanour, Dungannon,	1	1	0			
Butler, Thomas, Kilkenny,	3	3	0			
"B," Birmingham,	1	1	0			
Cairnes, H. M'C., M.P., London,	1	1	0	1	1	0
Cairnes, William, Drogheda,	2	0	0			
Caledon, Earl of,	57	0	0	5	0	0

	1841 to 1853.	1854.
Camm, S. & Co., Manchester,	£2 0 0	
Campbell, Henry, Belfast,	10 0 0	
Carlow Branch,	10 0 0	
Carty, Cairns, Rogers, & Co., Drogheda,	5 0 0	
Cassidy, Robert, Magherafelt,	1 1 0	
Castlebridge Farming Society, County Waterford,	10 0 0	
Cather, David, Newtownlimavady,	1 0 0	
Caufeild, Hon. Henry, Hockley, Armagh,	11 11 0	
Charlemont, Earl of,	43 0 0	
Charley, John, Finaghy, Dunmurry,	25 0 0	
Charley, J. & W., & Co., Seymour-hill,	14 14 0	£2 2 0
Charley, Hill, Belfast,	1 1 0	
Charley, M., Woodburn,	3 3 0	
Charley, J. Stouppe, Arranmore,	2 2 0	
Charters, John & Co., Belfast,	15 0 0	5 0 0
Clancarty, Earl of,	8 8 0	1 1 0
Clarendon, Earl of,	10 0 0	
Clarke, G. J., Steeple, Antrim,	2 2 0	1 1 0
Clarke, R., Bailieborough,	1 0 0	
Clarke & Innes, Drogheda,	5 0 0	
Clements, Hon. C. S., M.P., Milford,	15 0 0	5 0 0
Clermont, Lord, Ravensdale, County Louth,	30 0 0	5 0 0
Clonbrock, Lord, Ahascragh, County Galway,	10 0 0	
Clonakilty Branch, County Cork,	10 0 0	
Close, Lieut.-Colonel, Drumbanagher,	15 0 0	
Clothworkers' Company, London,	30 0 0	
Coates & Young, Belfast,	40 4 0	2 2 0
Coddington, H., Oldbridge, Meath,	1 0 0	
Cogry Mill Company, Doagh,	5 0 0	
Cole, Hon. John, Florence-Court,	2 0 0	1 0 0
Collum, John, Enniskillen,	1 1 0	
Conolly, Thomas, M.P., Cliff, Ballyshannon,	20 0 0	5 0 0
Conyngham, W. L., Cookstown,	1 0 0	
Cook, William, London,	20 0 0	
Cooper, E. J., Markree Castle, Sligo,	1 1 0	
Cootehill Branch, County Cavan,	15 0 0	
Cope, A. W., Drumilly, Loughgall,	5 0 0	
Cope, R., Manor House, Loughgall,	3 3 0	1 1 0
Coulson, Brothers, Lisburn,	13 3 0	
Coulson, James, Lisburn,	4 4 0	1 1 0
Coulter, Richard, Newry,	1 1 0	
Courtown, the Earl of, Gorey,	20 0 0	
Cowan, W. & Co., Whiteabbey,	20 4 0	
Crace, H., Belfast,	1 1 0	
Craig, A. W., Belfast,	13 3 0	
Cramsie, John, Belfast,	8 8 0	
Crawford, J. S., Crawfordsburn,	6 6 0	1 1 0
Crawford, W. S., Crawfordsburn,	41 0 0	2 2 0
Crawford, James S., Redemon,		1 1 0
Crawford & Lindsays, Banbridge,	4 4 0	
Cremorne, Lord, Rockcorry,	25 0 0	
Crichton, Hon. Colonel, Crom Castle,	4 4 0	
Crosbie, W. T., Adfert Abbey, Tralee,	1 1 0	
Cuppage, J. & Co., Lurgan,	35 10 0	
Curell, J. & D., Belfast,	25 0 0	
Curtis, Patrick, Dublin,	2 2 0	
Dargan, William, Dublin,	50 9 0	
Darley, Rev. J., Dungannon,	1 0 0	
Davison, A. & J., Broughshane,	35 5 0	

	1841 to 1853.			1854.		
Davison, Richard, M.P., Belfast,	£2	2	0	£1	1	0
Dawson, Rev. J. M., Tipperary,	4	4	0			
Denison, R., Pocklington, Yorkshire,	2	2	0	1	1	0
De Ros, Lord, Strangford,	2	5	0	2	0	0
De Ros, Lady, Strangford,	2	0	0			
Derry, the Lord Bishop of,	10	0	0			
De Salis, the Count, Tandragee,	6	1	0			
Despard, Mrs., Queen's County,	1	0	0			
De Vere, Sir Vere, Bart., Curragh-chase, Limerick,	2	2	0			
De Vesci, Viscount, Abbeyleix,	30	0	0			
Devonshire, the Duke of,	5	0	0			
Dewhurst, J. & Co., Preston,	2	2	0			
Dobbin, Leonard, Armagh,	1	1	0			
Donegall, the Marquis of,	5	0	0			
Douglass, Charles, Gracehall, Lurgan,	5	0	0			
Down, the Lord Bishop of,	15	15	0	3	3	0
Downshire, late Marquis of,	55	0	0			
Downshire, present Marquis of,	370	0	0	25	0	0
Doyne, Charles J., Wells, County Wicklow,	1	1	0			
Drapers' Company, London,	30	0	0	5	0	0
Drogheda Branch,	25	0	0			
Dromore, the Very Rev. the Dean of,	2	2	0			
Druitt, Thomas, Donacloney,	2	2	0			
Duff, Admiral, Elgin,	2	2	0			
Dufferin, Dowager Lady, Clifton,	15	0	0			
Dufferin and Clandeboye, Lord, Bangor,	11	2	0	2	0	0
Duffin, C. & Co., Belfast,	6	6	0			
Dunbar, M'Master, & Co., Gilford,	172	18	0			
Dungannon, Viscount,	20	0	0	5	0	0
Dunmanway Branch,	10	0	0			
Dunmurry Spinning Company,	10	10	0			
Durham, A., Belvidere, County Antrim,	2	2	0			
Duroni, Algimiro, Naples,				1	1	0
East Mill Company, Brechin,	2	0	0			
Edward, A. & D., & Co., Dundee,	5	0	0			
Enniskillen, Earl of,	16	0	0	4	0	0
Erne, Earl of,	60	0	0	5	0	0
Evans, T. K., Armagh,	1	0	0			
Ewart, W., & Son, Belfast,	29	4	0	2	2	0
Falls Mill Company,	148	11	0			
Fane, Cecil, Willey Hall, Shropshire,	2	2	0	1	1	0
Farmer, Sir G. R., Bart., Bideford, Devon,	1	1	0			
Ferguson, J. F., Belfast,	9	4	0			
Ferguson, J. S., & Co., Belfast,	27	2	0			
Ferguson, Sir R. A., Bart., M.P., Derry,	10	0	0			
Ferguson, T. & Sons, Whiterock,	2	2	0			
Fethard Flax Society, County Tipperary,	10	0	0			
Filgate, W., County Louth,	1	1	0			
Filgate, F. Hillsborough,	4	4	0	1	1	0
Fisher, John, & Co., Belfast,	14	7	0			
Fishmongers' Company, London,	50	15	0	5	0	0
Fitzpatrick, Right Hon. J. W., M.P.,	10	0	0			
Fitzpatrick, R. W., Granston Manor,	10	0	0			
Fletcher, Alexander, & Co., Glasgow,	75	17	0	2	2	0
Foott, H. B., Carrigacunna Castle, Cork,	1	1	0			
Forsythe & Orr, Belfast,	47	6	0			
Foster, R., Springfield, Dungannon,	2	2	0			

	1841 to 1853.	1854.
Gailey, Daniel, Coleraine	£1 1 0	
Galmoy Farming Society, County Kilkenny,	15 0 0	
Gamble, J. & W., Carrickfergus,	6 1 0	
Gartland, T. M'E., Carrickmacross,	1 1 0	
Gascoyne, Misses, Kilfinane, County Limerick,	10 0 0	
German, Petty, & Company, Preston,	115 0 0	
Gervais, Rev. F., Cecil, Augher,	8 3 0	
Gibson, James, Belfast,	4 4 0	£1 1 0
Gihon, William, & Sons, Ballymena,	8 8 0	1 1 0
Given, A., Newtownlimavady,	23 18 0	
Gladstone, John, London,	5 0 0	
Glasgow & Wood, Cookstown,	1 1 0	
Glendinning, H., Portadown,	1 1 0	
Goddard, James, Belfast,	6 1 0	
Gordon, R. F., Craigdarragh, County Down,	4 4 0	£1 1 0
Gore, Col. A. K., Beleek Manor, Balina,	2 2 0	
Gore, R., Ormsby, Mayo,	1 1 0	
Gosford, the Earl of, Markethill,	20 0 0	
Græme, Major, Crieff, Perthshire,	3 3 0	
Gradwell, Chadwick, & Co., Drogheda,	72 10 0	5 0 0
Graham, William, Lisburn,	1 1 0	
Grandison, Thomas, Orisaba, Mexico,	1 0 0	
Gray, William, & Sons, Whitehouse,	10 0 0	
Green, James, & Co., Keady,	18 7 4	
Greer, George, Lurgan,	18 13 0	1 1 0
Greer, James,	3 3 0	
Greg, Thomas, Ballymenoch,	4 4 0	1 1 0
Grehan, P., Mountplunkett, Athlone,	1 1 0	1 1 0
Greville, Algernon,	1 1 0	
Grimshaw, Edmund, Mossley,	75 0 0	
Grimshaw, James, & Sons, Whitehouse,	97 12 6	5 0 0
Gunning & Campbell, Belfast,	4 4 0	1 1 0
Gunning & Quarrell, London,	2 0 0	
Hall, Roger, Narrowwater Castle, Newry,	46 18 0	2 2 0
Hancock, John, Lurgan,	12 12 0	
Hancock, Professor, Belfast,	3 3 0	
Harden, James, Harrybrook, County Armagh,	1 1 0	
Hardy, C.,	5 0 0	
Hardy, J.,	1 1 0	
Harris, J. Porter, Ashfort, Tynan,	1 1 0	
Harrison, John, Mertoun, Belfast,	3 3 0	
Hawkshaw, Lieut.-Colonel, Blaris Lodge,	2 2 0	
Hay, Brothers, & Co., Dunleer,	1 1 0	
Hayes, F. W., Seapatrick, Banbridge,	4 12 0	
Hayes, Richard, Millmount, Banbridge,	2 2 0	
Hemphill, Hunter, & Co., Greenfield Coleraine,	18 18 0	
Henderson, Mr.,	1 0 0	
Henry. J. & W., Kirkcaldy,	1 0 0	
Henning, John, Waringstown,	24 19 0	2 2 0
Henry, George, Tassagh, Keady,	2 2 0	
Herdman, J. & J., & Co., Belfast,	109 16 0	1 1 0
Herdmans & Co., Strabane,	6 5 0	
Heron, Hugh, Banbridge,	1 0 0	
Hertford, late Marquis of,	100 0 0	
Hertford, present Marquis of,	225 0 0	25 0 0
Heuzé, Landerneau, France,	1 0 0	
Hewitt, Hon. and Rev. J. P.,	1 0 0	
Heyland, Langford, Portglenone,	2 2 0	1 1 0
Heyn, Gustavus, Belfast,	6 6 0	1 1 0

	1841 to 1853.	1854.
Heytesburry, Lord,	£10 0 0	
Higginson, Henry, Leeds,	1 0 0	
Hill, Lord George A., Gweedore,	6 1 0	
Hill, Lord A. Edwin, M.P.,	20 0 0	£5 0 0
Hillsborough, Earl of,	2 0 0	
Hincksman, Furness, & Co., Preston,	70 0 0	
Hind, John, & Sons, Belfast,	15 0 0	5 0 0
Hives & Atkinson, Leeds,	40 0 0	
Houston, R. B. B., Orangefield,	28 18 0	2 2 0
Hudson, William, Mount-Caulfield, Newry,	2 0 0	
Hull, Wilson, & Co., Belfast,	37 19 0	
Hull, Hart, & Co.,	4 4 0	
Hunter & M'Kisack, Belfast,	1 1 0	
Hurst, C.,	1 1 0	
Hutchinson, John, Tandragee,	1 1 0	
Idrone Farming Society, County Carlow,	10 0 0	
Inistioge Farming Society, County Kilkenny,	10 0 0	
Irish Society, the Hon., London,	75 0 0	10 0 0
Ironmongers' Company, London,	20 0 0	
Irwin, Crommelin, Newgrove, Belfast,	1 1 0	
Irwin, J. R., Carnagh, Keady,	2 2 0	
Jackson, F., Roscrea,	1 1 0	
Jackson, J. K.,	1 1 0	
Jackson, Thomas, Workington,	1 1 0	
Jackson, Thomas, Belfast,	2 2 0	
Jackson, William,	1 0 0	
Jaffe, Brothers, Hamburgh,	1 0 0	
Jamieson, Henry, Clonmel,	1 0 0	
Jennings, Francis M., Cork,	1 1 0	1 1 0
Jobling, E., Carlisle,	2 2 0	
Johnson, John, Moy,	1 1 0	
Johnston, Joseph, Knappagh, Armagh,	1 1 0	
Jones, John, Templeranney, Arklow,	1 1 0	
Jones, Lewis, G., Wood-hill, Dromore West,	1 1 0	
Jones, Miss, Kilwaughter-Castle, Larne,	2 0 0	
Jones Major, Drumard, County Leitrim,	1 1 0	
Kavanagh, Lady Harriet, Kilkenny,	1 0 0	
Kavenagh, J. B., Newtownlimavady,	1 1 0	
Kay, James, & Son, Manchester,	57 10 0	
Kempson, William, Bromyard, England,	2 2 0	
Kennedy, James, & Sons, Belfast,	28 0 0	2 2 0
Ker, David, S., M.P., Montalto, County Down,	10 0 0	
Kilkenny Branch,	10 0 0	
King, Henry, Dungiven,	2 2 0	
King, James,	1 1 0	
King, Michael,	1 0 0	
Kingston, A. C., Longford,	1 1 0	
Kinmond, Peter, Dundee,	1 0 0	
Kinmond & Hill, Dundee,	1 0 0	
Kirk, William, M.P., Keady,	4 2 0	1 1 0
Kirkpatrick, Dr., Dublin,	5 5 0	1 1 0
Kirwan, Denis, Castlehacket, Tuam,	5 5 0	1 1 0
Knox, J. & W., Kilburnie, Ayr,	1 0 0	
Knox, M. W., Arthurstown, Wexford,	2 2 0	1 1 0
Kreuter, Francois, Vienna,	1 1 0	
Lalor, Patrick,	1 1 0	

	1841 to 1853.	1854.
Lancey, Captain, Newtownlimavady,	£1 0 0	
Landall, D., & Co., Kirkcaldy,	2 2 0	
Lansdowne, Marquis of,	10 0 0	
Larne Farming Society,	10 0 0	
Lascelles, Rev. R. P.,	1 1 0	
Law, Samuel, Banbridge,	29 12 0	
Leadbetter, J., & Co., Belfast,	8 8 0	
Leadbetter, Adamson, & Co., Blairgowrie,	2 0 0	
Leathem, J. & W., Derry,	5 0 0	
Ledlie, George, Cogry,	1 1 0	
Le Hunte, George, Artramont, Wexford,	2 2 0	£1 1 0
Leinster, Duke of,	30 0 0	
Leslie, C. P., M.P., Glasslough,	45 0 0	
Leslie, Edmund, Donaghadee,	3 3 0	
Leslie, Rev. E., Annahilt,	4 0 0	
Leslie, William, Donaghadee,	1 1 0	
Lewis, A. G., Monaghan,	1 1 0	
Limerick Agricultural and Flax Society,	10 0 0	
Lindsay, D., Ashfield, Dromore,	9 9 0	
Littledale, A. H., Bolton-Hall, Lancashire,	1 1 0	
Lloyd, R.,	1 1 0	
Local Agricultural Fund,	100 0 0	
Londonderry Farming Society,	15 0 0	
Londonderry, Marquis of,	30 0 0	
Louth Farming Society,	15 0 0	
Lowry, Joseph, Belfast,	2 2 0	
Lawson, Andrew, Arbroath,	4 0 0	
Lucan, Earl of, Castlebar,	15 0 0	
Lucas, Right Hon. E., M.P.,	2 2 0	1 1 0
Lucas, F., M.P., Dublin,	3 3 0	
Ludolf, H., Leeds,	3 3 0	1 1 0
Lurgan, late Lord,	145 0 0	
Lurgan, present Lord, Lurgan,	20 0 0	10 0 0
Lyle, James, Knocktarna, County Derry,	1 1 0	1 1 0
Magill, S. R., Cookstown,	3 1 0	
Mahoney, Rev. Denis, Kenmare,	5 0 0	
Malcolm, A. G., Kirkcaldy,	1 1 0	
Malcolm, James, Lurgan,	7 7 0	
Mann, A., & Son, Arbroath,	4 2 0	
Marley, Gabriel, London,	1 0 0	
Marshall, & Co., Leeds,	295 0 0	
Marshall & Co., Patrington,	4 4 0	2 2 0
Martin, John, jun., Killileagh,	48 8 0	2 2 0
Massareene, Viscount, Antrim,	6 0 0	3 0 0
Matthew, John, Ratholoheen, Cashel,	1 1 0	
Matthew, Very Rev. T., Cork,	2 2 0	
Maxwell, J. W., Finnebrogue, County Down,	10 10 0	
Maxwell, R. P., Groomsport, County Down,	4 4 0	1 1 0
Mayo, Earl of, Athy,	5 0 0	
Meade, Hon. General, London,	35 0 0	
Meath Industrial Society,		10 0 0
Mell Mill Company, Drogheda,	14 6 3	
Mercers' Company, London,	90 0 0	5 0 0
Metcalf, J. & G., Pateley-Bridge, Ripon,	2 2 0	
Middleton Union Farming Society, County Cork,	15 0 0	
Millar, Alexander, Ballycastle,	1 1 0	
Millar, Rowley, Moneymore,	1 1 0	
Milne, Cruden, & Co., Aberdeen,	25 0 0	
Molony, James Kiltanon, County Clare,	2 2 0	
Monaghan Branch,	15 0 0	

	1841 to 1853.			1854.		
Monkstown Spinning Company, Whitehouse,	£40	2	0	£2	2	0
Monsell, Wm. M.P., Tervoe, Limerick,	2	0	0			
Monteagle, Lord,	10	0	0			
Moore, Henry, Barne, County Carlow,	1	0	0			
Moore, James, Moorefort, County Antrim,	3	0	0			
Moore, J. S., Ballydivity, County Antrim,	5	0	0			
Moore, Samson, Ballynacree, County Antrim,	5	0	0			
Morfit, John, Leeds,	24	3	0	3	3	0
Mortimer, R., Carrick-on-Shannon,	1	1	0			
Mulhollands, Belfast,	100	0	0			
Mulholland, A., & Son, Belfast,	166	13	0			
Mulholland, S. K., & Hinds, Belfast,	149	6	0			
Mulholland, William, Belfast,	2	10	0			
Munn, John, jun., Londonderry,	20	0	0			
Murdoch, William, Monaghan,	1	1	0			
Murland, James, Castlewellan,	95	0	0			
Murphy, John, & Co., Linfield, Belfast,	17	10	0			
MacAdam, Brothers, & Co., Belfast,	17	12	0			
Macart, Dr., Dromore,	2	2	0			
Macartney, G., M.P., Lissanoure-Castle,	26	1	0			
Macauley, Patrick, Randalstown,	23	9	0			
M'Cartan, J., Waringstown,	8	8	0	1	1	0
M'Causland, M., Newtownlimavady,	5	0	0			
M'Clelland, James, Banville,	4	4	0			
M'Clelland, William, Dromore,	7	7	0	1	1	0
M'Clintock, H. Stanley, Randalstown,	2	2	0	1	1	0
M'Clure, Thomas, Belfast,	4	4	0	2	2	0
M'Connell & Kennedy, Belfast,	4	4	0	2	2	0
M'Donald, A., & Co., Kirkcaldy,	1	1	0			
M'Donnell, E., Glenarm-Castle,	12	8	0			
M'Gaw, William,	1	0	0			
M'Gildowney, J., Ballycastle,	1	0	0			
Mackay, James,	1	1	0			
M'Kean, Henry, Keady,	1	1	0			
M'Kee, John, Keady,	1	0	0			
M'Kenzie, Alexander,	1	1	0			
M'Kibbin, R., M.D., Ballymacarrett,	31	0	0			
M'Kinstry, Lee, Armagh,	1	1	0			
M'Murray, G., & Co., Waringstown,	2	10	0			
M'Murray, Thomas, & Co., Dromore,	20	6	0	2	2	0
M'Naghten, Sir E. C. W., Bart., Bushmills,	2	2	0			
M'Naghten, Sir F. W., Bart., Bushmills,	12	10	0			
M'Naghten, B., Ballyboggy, Coleraine,	11	11	0			
M'Neece, Rev. F.,	1	1	0			
M'Neill, J., Parkmount, Belfast,	14	9	0	1	1	0
Macoun, John, Kilmore,	1	0	0			
M' Peake, W., Ballymena,	1	1	0			
M'Watty, James, Castleblaney,	1	1	0			
Nelson, John, & Co., Selby,	1	0	0	1	0	0
Nenagh Agricultural Society, Co. Tipperary,	10	0	0			
Nesbitt, John, London,	7	2	0			
Newry & Mourne, Viscount, M.P.,	26	5	0			
Newton, P. J., Dunleckney, Carlow,	2	0	0			
Nicholson, George, Donacloney,	1	1	0			
Nicholson, John, New York,	6	10	0	1	1	0
Nicholson, Joseph,	2	2	0			
Nicholson, R., Donacloney,	1	1	0			
Nicholson, William, Donacloney,	1	1	0			

	1841 to 1853.				1854.		
Niven, Richard, Chrome-hill,	£13	13	0	...	£1	1	0
Norris, John, Camowen, Omagh,	5	5	0	...	1	1	0
Norrie, C., & Sons, Dundee,	1	1	0				
Nugent, Colonel, Portaferry,	15	0	0				
O'Brien, W. S., M.P., Cahirmoyle,	1	1	0				
Ogilby, Sir J., Bart, Baldovan, Perthshire,	1	0	0				
Oliver, W., Spring Lodge, Kilfinane,	1	0	0				
O'Neil, Viscount, Randalstown,	10	0	0	...	5	0	0
Orr, Andrew,	1	1	0				
Orr, William, & Sons, Glenalina,	1	1	0				
Orr Bridge Flax Company, Fife,				...	1	1	0
Overend, J., & Co., Darlington,	1	1	0				
Palmerston, Viscount,	1	1	0				
Parker, Preston, & Co., Belfast,	5	0	0				
Paton, J. & G., Montrose,	10	5	0				
Patrick, J., & Sons, Ballymena,	7	7	0				
Patton, William, Armagh,	1	1	0				
Peel, Right Hon. Sir Robert, Bart,	25	0	0				
Perceval, Spencer, Finnebrogue, County Down,	3	8	0	...	1	1	0
Phibbs, William, Seafield, Sligo,	1	1	0				
Pike, Jonathan, Coalisland,	1	0	0				
Pirrie, William, Belfast,	1	1	0				
Porter, H. J., Tandragee,	2	2	0				
Porter, Rev. J. G., Lisbellaw, Enniskillen,	8	3	0				
Porter, J. G. V., Kilskerry, Trillick,	2	2	0				
Powerscourt, Representatives of Viscount,	35	0	0	...	5	0	0
Pownall, C. J., Wilton, County Wexford,	1	1	0	...	1	1	0
Praeger, John, Belfast,	2	2	0				
Prentice, H. L., Caledon,	12	12	0	..	1	1	0
Preston, John, & Co., Belfast,	10	5	0	...	1	1	0
Price, James, Saintfield,	12	12	0	...	1	1	0
Price, Nicholas, Saintfield,	20	0	0				
Price, Sir Charles, & Co., London,	10	0	0				
Primate, the Lord, Armagh,	29	0	0	...	3	0	0
Provincial Bank of Ireland,	20	0	0				
Quarrell, Francis, London,	1	1	0				
Quinn, James, Dromore-house,	1	1	0				
Quinn, James Henry, Newry,	1	1	0				
Quinn, Peter, Dromore-House,	1	1	0				
Ram, Stephen, Ramsfort, Wexford,	1	1	0				
Ranfurley, Earl of, Dungannon,	62	0	0	...	5	0	0
Reilly, J. T., Scarva, Loughbrickland,	10	8	0	...	1	1	0
Renny, Sons, & Co., Arbroath,	9	9	0				
Renshaw, W., & Co., Manchester,	12	12	0				
Richards, & Co., Aberdeen,	25	10	0				
Richardson, Brothers, & Co., Belfast,	79	14	0	...	2	2	0
Richardson, & Co., Lambeg,	71	10	0	..	5	0	0
Richardson, H., Somerset, Coleraine,	12	11	0				
Richardson, Miss J., Richhill,	28	14	0	...	2	0	0
Richardson, J. G., Newry,	2	2	0				
Richardson, J. & T., & Co., Springfield,	10	9	0	...	1	1	0
Richardson, Samuel, & Co., Lisburn,	30	0	0				
Richardson, J. J., M.P., Lisburn,	12	12	0	...	2	2	0
Richardson, J. N., Sons, & Owden, Belfast,	112	10	0	...	5	0	0
Riverstown Flax Society, County Cork,				...	10	0	0

	1841 to 1853.			1854.		
Roberts, John, Collin, Lisburn,	£6	6	0	£1	1	0
Robinson, George, Drimoleague, County Cork,	1	1	0			
Roche, E. B., M.P., County Cork,	5	0	0			
Roddy, Robert, Belfast,	7	7	0	1	1	0
Roden, Earl of,	10	0	0			
Rollo, R., Moyfort, Ballina,	2	2	0			
Rome, Joesph, Carlisle,	3	3	0			
Roscrea Branch,	10	0	0			
Ross, D. R., M.P., Rostrevor,	10	0	0			
Rossmore, Lord, Monaghan,	5	0	0			
Rowan, Major, Merville,	22	6	0			
Rushout, the Hon. Captain, M.P., Worcester,	1	1	0			
Rutherford & Co., Dumfermline,	2	2	0			
Russell, James, Dunlewey, County Donegall,	2	2	0			
Russell, Matthew, Newry,	1	1	0			
Sadler, Fenton, & Co., Belfast,	14	12	0	2	2	0
Sadler, S. & Co., London,	2	0	0			
St. Leger, Hon. A. B., Adare, Limerick,	2	0	0			
Salters' Company, London,	10	10	0			
Saunders, Miss, Fortgranite, Baltinglass,	1	1	0			
Saunders, R. F., Baltinglass,	1	0	0			
Savage, John, Belfast,	4	4	0			
Scott, Major, Willsbro', Derry,	1	1	0			
Seaver, Captain J., Heath-Hall, Newry,	5	0	0			
Shaw, Edward, & Co., Belfast,	24	2	0			
Shaw & Houghton, Celbridge,	62	10	0			
Shaw, Joseph, Templemills, Celbridge,	27	10	0			
Shaw, William,	15	0	0			
Shirley, Evelyn, J., M.P., Lough Fea,	10	0	0	5	0	0
Shuldham, Lieutenant-General, Dunmanway,	2	2	0			
Shouldham, John, Ballymahon,	3	3	0			
Simms, William, Belfast,	6	6	0	1	1	0
Simpson, John,	1	0	0			
Skibbereen Branch, Co. Cork,	15	0	0			
Skinner, C. G. M'G., Malone,	5	5	0	1	1	0
Sligo Branch,	10	10	0			
Sligo, Marquis of, Westport,	10	0	0			
Smyth, John, & Co., Banbridge,	27	2	0			
Smyth, Ralph, Drogheda,	1	0	0			
Spencer, Lawrence, & Co., Preston,	2	2	0			
Sproule, John, Dublin,	1	0	0			
Staples, Edmund, Queen's County,	1	1	0			
Staples, Sir T., Bart., Lissan, Co. Tyrone,	5	0	0			
Stevenson, J. & W., Roan Mills, Dungannon,	6	5	0			
Stewart & M'Clelland, Ligoneil,	99	19	2			
Stewart & Savage, Lisburn,	22	10	0			
Stewart, R., & Sons, do.,	16	10	0	1	1	0
Storar, Thomas, & Co., London,	16	12	0	2	2	0
Stoney, Isaac, Gilford,	1	0	0			
Story, A., Carrick, Co. Fermanagh,	1	0	0			
Stradbally Flax Society, Queen's Co.,	10	0	0			
Straker, William, London,	1	1	0			
Stringer, Captain, Tynan,	1	0	0			
Stronge, Sir J. M., Bart., Tynan-Abbey, Armagh,	23	2	0	2	2	0
Sturrock, John, Dundee,	2	2	0	1	1	0
Stuart de Decies, Lord, Cappoquin,	5	0	0			
Sullivan, John, Kinsale,	1	0	0			
Swan, P. D., Kirkcaldy,	2	0	0			
Symes, John, Ballina,	3	3	0			